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ABSTRACT

Guidelines for planning in higher education (which might have an application in Colombia) are described. Chapter 1 provides an expanded definition of higher education that includes noncollege channels to lifelong education and embraces all viable postsecondary education. Chapter 2 addresses current problems facing higher education, such as lack of statewide planning, proliferation of programs and institutions, lack of educational opportunities for all citizens, unsatisfactory financing, and inadequate measures of performance. Chapter 3 presents a general view of higher education, principles for development of higher education, and goals and objectives for higher education. In chapter 4 focus is on governance and management and proposals for both a state commission and a management agency are presented. Chapter 5 covers enrollment forecasting and describes an analytical procedure for predicting the number of potential college and postsecondary enrollees. Needs, aspirations, and accomplishments of high school seniors, high school graduates, vocational-technical students, seniors and graduates of private four-year colleges, public colleges and universities, and community junior college students are examined in chapter 6. Chapter 7 summarizes educational planning model applications and capabilities, and chapter 8 provides a report of the status of the model system in 1970 and lists 12 recommendations growing out of the program evaluation. (BD)

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MINISTERIO DE EDUCACION NACIONAL
INSTITUTO COLOMBIANO PARA EL FOMENTO DE LA EDUCACION SUPERIOR

GUIDELINES FOR PLANNING IN HIGHER EDUCATION

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Document on the main topics convered in the discussions held at the institutions of Higher Education visited by Dr. Kenneth E. Anderson during his stay in Colombia as a Fulbright – Hays Commission Grantee.

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PREFACE

During his sabbatical leave from the University of Kansas, Lawrence, Kansas, U.S.A., Dr. Kenneth E. Anderson received a grant from the Fulbright Commission in order to come to Colombia to develop a program of technical assistance for ICFES (Colombian Institute for the Promotion of Higher Education) and some Colombian Universities.

As a result of his visit to ICFES and the universities of Valle, Norte, Industrial of Santander and Andes, Dr. Anderson with the collaboration of Dr. Hernán D. Acero, staff member of ICFES, prepared the present volume as an approach to planning in Higher Education which might have an application in Colombia.

Some meetings were held at ICFES and at the universities with people from the planning offices of those institutions. At these meetings, topics such as: Current Problems, Philosophy and Goals, Coordination, Statistics, Finance and Governance of Higher Education were discussed. This document is an ordered version of most of the topics covered in the discussions held at the institutions during Dr. Anderson's stay in Colombia.

Dr. Anderson is Professor of Administration, Foundations, and Higher Education at the University of Kansas. He was also Executive Director of the Kansas Master Planning Commission from 1970 to 1973.

Dr. Anderson wishes to acknowledge the contribution to this volume of the members of the Kansas Planning Commission and its staff, particularly Dr. Harold L. Finch, Research Associate and Project Director on Modeling.

K.E.A. and H.D.A.

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CHAPTER I

AN EXPANDED DEFINITION OF HIGHER EDUCATION

INTRODUCTION

Higher education has gone through many stages of development. The period that just ended (1945-1970) has been called the golden age and was highlighted primarily by a tidal wave of students and the arrival of universal access to higher education as community junior colleges spread across the nacion and new programs made their appearance.

Despite predictions of an increase in the number of students in the years ahead, many of the largest colleges and universities in the U.S.A. are now experiencing stable enrollments, and some smaller public and private institutions are losing enrollments or have experienced little growth. A Newsweek article states:

> There are dark shadows of despair on the campuses of many U.S. Colleges this year- shadows that deepen almost daily as enrollments dwindle, donations decline and costs skyrocket. (1)

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(1) Newsweek, January 14, 1974, p. 58.

In Colombia, on the other hand, enrollments are increasing and it has become necessary to open more junior colleges and offer more programs, or to look for new ways to offer higher education in order to solve enrollment problems.

Any appraisal of postsecondary education, whatever its focus, is affected by enrrollment trends, for these in part determine the continuance of programs or introduction of new ones, staffing of colleges and universities, and costs associated with maintenance of staff and programs.

Along with the phenomenon of stabilizing enrollments comes the problem of tightening budgets for : (a) education is a service oriented enterprise and unlike industry, education cannot offset increases in cost by increases in productivity made possible by automation; (b) inflation is a factor closely related to the fact that educación is service intensive and the higher the rate of inflation, the more profound the impact of this factor; and (c) a university must maintain its programs, regardless of slight drops in enrollment. (2)

The above is an illustration of the problems associated with trends in enrollment. Morisseau states:

> Enrollment levels of course, are not the only factor in the current crisis in higher education. Money is in short supply; state legislatures and funding agencies are demanding greater by institutions; higher education appears to have lost credibility in the eyes of both government and public. The result ... is that

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(2) University of Minnesota Financial Report 1973, p. 7

> external pressures requiring colleges and universities to become deeply involved in the planning processes are inexorable. (3)

It thus appears that higher education is entering a new period where the dominant theme may be called survivalism. As Palola views the situation, the greatest challenge of the 70's will be the necessity for a complete reassessment of the basic forms and functions of higher learning. According to Palola (4) at least two imperatives are highly visible today:

1. The imperative to concentrate on the education of an increasingly diverse student population with equally diverse educational needs is the first.

2. The second imperative extends beyond the inmediate task of education students. It involves higher education's role, even obligation, in the solution of current problems in today's society.

Unless higher education responds to these two imperatives by a constructive change, it may well be that the period from 1975 to 1985 will be marked by

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(3) James J. Morisseau. "For Planners, that Shrinking Feeling". Planning for Higher Education. Vol. 2, No. 5: 4/4, October, 1973 (Published by Educational Facilities Laboratories, Inc., New York, N. Y.)

(4) Ernest Palola. "Academic Reform: A Challenge for Statewide Planners". The Research Reporter, The Center for Research and Development in Higher Education, University of California, Berkeley, Volume V, Number 2, 1970, p. 4.

several controversies. Kerr (5) alluded to seven possible problems: (a) competition for students, (b) interinstitutional competition, (c) problems associated with affirmative action, (d) conflict between rigidity and change, (e) competition for influence and power, and (f) provision for student aid and (g) student dissent.

In order to avoid an age of controversies in higher education, planning must be accorded the highest priority possible. The major challenge then to higher education is that it must devise a style of planning which will produce an effective amalgam between efficiency on the one hand and effectiveness on the other. Constructive change can only come about through strong leadership coupled with wide participation in planning by all segments of society having a stake in higher education. This change can only occur in a milieu which tolerates or endorses a broad concept or definition of higher education.

A Definition of Higher Education

The two-track system of education beyond high school is practically a universal mode of operation. One track is represented by higher academic degree-granting institutions and the other is represented by the "unsystematic collection of nondegree educational institutions and programs throughout the rest of

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(5) Clark Kerr. "The Future Course of Higher Education: The Age of Controversies". The North Central Association Quarterly, Volume 48, Number 4, Spring 1974, pp. 350 - 354.

society (6). It is now quite evident that the relationship between these "tracks will be of increased concern to educational planner during the 70's, since pressure is developing for greater rapprochement between academic and its non-degree counterparts. (7) The boundaries between the two tracks are blurred and will undoubtedly become more so with time. This tendency is evident when we consider the role of the community college. B. Lamar Johnson (8) lists six characteristics and their trends which are use ful in coming to an understanding of the junior college. Among these are two of immediate concern:

1. The Junior college is assuming a major responsibility for preparing students for upper division work at universities and other senior institutions.

2. The junior college is assuming a major responsibility for technical-vocational education.

Many community junior colleges are assuming these two major responsabilities

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(6) J. B. Lon Hefferlin. "Future Challenges and Trends in Postsecondary Education". Statewide Planning for Postsecondary Education: Issues and Design, ed. By Lyman A. Glenny and George B. Weathersby. WICHE, Boulder, Colorado, 1971, p. 53.

(7) Ibid., p. 53

(8) B. Lamar Johnson. Islands o e Innovation Expanding: Changes in Community Colleges. Clencore Press, Beverly Hills, California, 1969, pp. 37 - 38.

and more. As we move into a more technologically oriented world, the programs offered by the vocational-technical schools will by necessity include more cognitive learning to supplement the acquisition of hand skills. For example, a study of the manpower needs of the U.S.A. indicates that about 18 to 20 percent of the need lies in management and in the professions where a Bachelor's degree or an advanced degree is required. About 30 percent of the need lies in what is called the middle management level where the training required ranges from one to three or more years of postsecondary training. It is the upper portion of this sector that has been relatively untouched by any institution except for a few high powered technical institutes which have been able to provide both the cognitive and practical aspects of education needed by their students. Most technical institutes of the kind referred to are relatively narrow in their scope of offerings and cannot or do not train the variety of toplevel technicians and para-professionals needed in our society today. Perhaps the time is ripe for cooperation among two-year and four-year institutions to join hands in meeting this need. Programs of the type alluded to can exist side by side with standard degree programs and perhaps in the process enhance both. In view of this fact, should not more community junior colleges and vocational-technical schools be combined ?

Should not colleges and universities train, for example, technical-engineering and technical-health personnel short of the baccalaureate degree ? In fact, some programs short of the baccalaureate degree are now in existence in public baccalaureate degree-granting institutions. Where does one draw the line between what is vocational and non-vocational higher education or between what is non-collegiate and collegiate education ? Throughout history:

> Colleges and universities have expanded in scope and service by gradually adopting formerly monacademic programs. After assuring themselves of the respectability of the programs, they have eventually proceeded to award academic degrees to the students enrolled in them .... In sum, American academic institutions continue to expand bit by bit their meaning of what is academic. They slowly encompass sections of the educational enterprise previously occupied by nondegree programs, allowing and forcing nondegree programs to advance into new fields of knowledge and activity. (9)

The Carnegie Commission on Higher Education recently published a report entitled: Toward a Learning Society: Alternative Channels to Life Work and Service. Larry Van Dyne has this to say about the new report:

> The Carnegie Commission on Higher Education, which in 20 has concentrated its attention on colleges and universities, today is issuing a 21st that examines other forms of education after high school. It reflects, the commission says, its "only recent realization" of the importance of such institutions.
>
> .....
>
> ... Historically, the commission says, the rhetoric, public policy, and status of American society have given short shrift to the institutions involved in what it calls "further education" rather than "higher education".

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(9) Hefferlin. op. cit., p. 55.

> ... The commission urges that the country develop an expanded frame of reference and develop ways of better utilizing these noncollege institutions so that people can pursue learning at a stop and go pace throughout their lifetimes. (10)

Among the Carnegie Commission's specific recommendations is this one:

> Recognition of all postsecondary education in statewide planning and coordination, with an understanding that different institutions should concentrate on different kinds of education. New consideration for noncollegiate institutions, the commission stresses, should be given "without in any way diverting attention and support away from the more traditional forms of higher education." (11)

It must be made clear that the recognition of all postsecondary education in statewide planning and coordination does not violate the traditional forms of higher education. Sir Eric Ashby states in the first of a series of essays sponsored by the Carnegie Commission on Higher Education:

> In the United States the traditional higher education and other kinds of postsecondary education are not segregated into different

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(10) Larry Van Dyne. "Carnegie Scans Alternatives to College". The Chronicle of Higher Education, VIII (October 1, 1973) 1 and 4.

(11) Ibid., p. 4

> categories of institutions, and the distinction is correspondingly more difficult to define and maintain .... in America the thin stream of intellectual excellence is kept clear by two institutional devices: the highly selective university and the prestige graduate school .... There must be, within any system beyond the high school, opportunities for the intellect to be stretched to its capacity, for the critical faculty to be sharpened to the point where it can challenge assumptions. This cannot be done except by close contact with men who are intellectual masters. Not many students are fit for this discipline, but those who are must be able to find it, or the thin stream of excellence on which society depends for innovation, for wise judgement in unforeseen crises, for management of highly complex systems, will dry up. (12)

Excerpts from an address by Sir Eric Ashby to a recent Brithish Conference on mass higher education appeared in The Chronicle of Higher Education. In this address Sir Eric Ashby stated :

> Finally there is another and different conceptual framework which is helpful in some discussions of higher education. A person's capacity to contribute to society can be broken down into three different kinds of skills: Skill in working with ideas,

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(12) Sir Eric Ashby. Any Person, Any Study: An Essay on Higher Education in the United States. The Carnegie Commission on Higher Education, Mc Graw-Hill Book Company, New York, 1971, p. 31.

> skill in working with things, skill in working with people. Tradidionally the first skill has been taught in the universities, the second in polytechnics, and the third is learned, if at all, "on the Job".
>
> Everyone needs a mixture of all three skills, though in different proportions (13).

Perhaps this has been a circuitous route for determining a definition of higher education. The following definition of higher education by James K. Hitt of the University of Kansas, reads as follows:

> For the purpose of this paper, let it be understood that higher education embraces all forms of respectable, organized post-high school education and training activity. Notice here that credit toward a baccalaureate degree, in the ordinary sense, is not the criterion; instead we are concerned with organized forms of post-high school education and training, which are respectable in the sense that they are required by those who are to participe and function effectively in today's and tomorrow's society.

Perhaps it is time we subscribed to this all-inclusive definition of higher education because the non-college channels to life-long education can no longer be ignored in statewide planning and coordination. Higher Education must embrace all viable post-secondary education.

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(13) The Chronicle of Higher Education, October 2, 1972.

CHAPTER II

SOME CURRENT PROBLEMS FACIN HIGHER EDUCATION

INTRODUCTION

Although the citizenry of many states is well served by the systems of postsecondary education, significant areas of serious weaknesses do exist. This chapter focuses on areas of concern so that they may serve as points of reference in the development of a philosophy and a series of recommendations for strengthening postsecondary education in the years to come. Some of the concerns are summarized in the following sections.

Lack of Statewide Planning

> Never before in the history of higher education has the concern over statewide planning been so widespread. With our institutions of higher education under attack, statewide planning is being regarded by many as the vehicle that can effect better institutional management and enhance public opinion of higher education. Along with this new role for statewide planning has come the need for reassessment of the meaning of its role in higher education. Concurrent with the new role has come the necessity to reevaluate the organizational structure that would accomplish that role. (1)

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(1) Lyman A. Glenny and George B. Weathersby. Statewide Planning for Postsecondary Education: Issues and Design. WHICHE, Boulder, Colorado, 1971, p. vi

Despite the concern and efforts being made for statewide and institutional planning, much remains to be accomplished. In many states, the attempts made have been sporadic and confined to levels or types of postsecondary education. The scope of such activities has not taken into account the total needs of each state and its citizenry. The existing postsecondary systems do not fully reflect such factors as the educational aspirations of its citizens, manpower needs of the state, economic development of the state, projected economic conditions affecting employment, social needs, better and more efficient use of human and natural resources, and consumer needs of the citizenry. A reasonable choice of educational programs to be pursued, as well as convenient location, have not been available to all persons interested in postsecondary education.

Proliferation of Programs and Institutions

The number of postsecondary programs and institutions in many states exceeds that required to adequately serve the needs of the state. As a result of this proliferation, the following problem areas are not uncommon: (1) needless competition for students and revenue, (2) unnecessary duplication of courses and programs, (3) limited program offerings in some institutions, and (4) inefficiencies due to failure to achieve economies of scale.

Lack of Educational Opportunities for All Citizens

A person's ability to contribute to society requires different kinds of skills: working with ideas, working with things, and working with people. In order to help individuals find their place in the working world, the postsecondary educational system should provide opportunities for adults to acquire saleable skills in one or more of these three categories.

Despite the abundance of colleges and vocational schools, the postsecondary needs of many citizens are not being met. Broad educational opportunities are severely limited, particularly for working people and members of minority segments of the population.

A nation's greatest resource has been and will continue to be, its people. Without the application of their vision, talents, skills, and energies, other resources are relatively useless.

Overemphasis on Baccalaureate and Graduate Studies

The value of an educated citizenry can not be measured in terms of economy alone. However, the current mismatch between the product of the postsecondary system and the demands of the market has reached a point where training for employability must be given more consideration. The large number of persons educated for professional positions who are finding it difficult to obtain employment in their field is costly in terms of time, energy, self-worth, financial resources, and unfulfilled needs of the economy.

Systems of Academic and Occupational Education

Life has become more complex and rapid technological change caused drastic reductions in opportunities for unskilled workers along with a comparable increase in need for professional, technical and skilled personnel. Today it is evident that a nation needs to develop programs in both areas, the academic and the occupational.

Some countries have a dual system of academic and occupational education, others are trying to develop or to unify both systems under one system. In

this respect there is some controversy as to whether these two kinds of curricula should exist in one kind of institution or in separate, different kinds of institutions. It seems that a nation should study the possibility of a dual or united system based on topics such as the following: (1) cost of the programs; (2) duplication of services, staffing, equipment, and facilities; (3) institutional enrollments; (4) offerings of programs with theoretical, cognitive technical, and practical training; (5) selection and segregation of students on an educational basis; and (6) status of the professions and of occupational education.

Many employers contribute to the overemphasis of four-year and graduate education by using degrees and diplomas, even though they may be irrelevant for job requirements, as a filtering system for selection of employees. This must not diminish the great value to society of the non-vocactional curricula offered in our colleges and universities on which society depends for much of its innovation and statesmanship. The present concern is with the overemphasis on degree-producing studies which has resulted in a poor match between manpower supply and demand.

Unsatisfactory Financing

A major problem is the lack of uniformity in the distribution of governmental monies whatever their source. Related problems include insufficient revenue to adequately support needed educational programs and rising tuition and fee costs for students. The substantial differences in the percentage of state aid among the types of public institutions are unjustified and are not in the best interest of postsecondary education. As a result of insufficient funding, the more costly programs, such as technological and occupational training and education, have been deemphasized. Budgetary projections indicate that the problem will become more severe during this decade. In order to maintain the

current level of program emphasis, and to serve the increase in student enrollments, the revenue required to support statewide operating budgets must be increased or the system of higher education must use other methods and ways of schooling.

Inadequate Measures of Performance

Never before in the history of postsecondary education has the focus on accountability been so intense. Selfexamination has been forced upon educational institutions of learning by alienated students, disaffected faculty, dissatisfied legislators, disenchanted alumni, and disappointed parents who are challenging the present system of postsecondary education. As a result, there is a growing reluctance by governmental and private sources to finance postsecondary education. Innovative methods of instruction may possibly cut costs. Costs are climbing steadily, while income from all sources is increasing too slowly to meet the demands of education.

Despite increased concern for accountability, there is still a widespread lack of meaningful assessment of postsecondary education. One of the primary reasons for this failure has been the placement of evaluative emphasis on the processes of education. Postsecondary education should be more concerned with the measurement of educational achievement in relation to student priorities and goals and those of each of each state.

The other determent to an effective process of evaluation is the lack of a uniform data base. At present, there is no standardized data collection system that cuts across all of postsecondary education. This also precludes the implementation of program budgeting.

CHAPTER III

PHILOSOPHY AND GOALS FOR HIGHER EDUCATION

INTRODUCTION

The context in which effective comprehensive planning takes place must include the present status of higher education and the existing arrangement of institutions, past and present national and local trends, and the many forces which impinge upon higher education from the various sectors of society. Consistent and effective decisions relative to systematic planning may include the following: (1) a general view of higher education, (2)principles which should guide the ongoing development of higher education, and (3)goals and objectives which higher education should aim at achieving.

A View of Higher Education

The development of human resources must be the central and dominant priority for the ensuing decade 1970-1980. Without such emphasis the future economic, social, and cultural growth of the nation will lag behind that of other nations.

As life in our society has become more complex and as rapid technological change has caused drastic reductions in opportunities for unskilled workers (but with equally astounding increases in the need for professional, technical, and skilled personnel), it seems evident that the time is very near when all

states must provide postsecondary education for most of their citizens. This simply means that every high school graduate should be actively encouraged to enter an appropriate program of postsecondary education, and that every effort should be made to remove barriers to such education.

However, a simple extension of the years of formal education will not be sufficient, for the opportunities must be of sufficient quality to justify the necessary financial investment of the government and the student. Thus the real need is to prepare people who will be truly competent in applying their training and ability constructively and who will make effective contributions to economic and social development in an increasingly complicated and technological envoronment. The watchword for higher education in the ensuing decade must be quality.

Higher education to many people means the four-year institution plus, in some instances, the provision for graduate work beyond the four-year baccalaureate degree. In this context, the missions of higher education are usually considered to be teaching, research, and public service. All three are concerned with either the production or the distribution of the most useful of all commodities: knowledge. All three have as their ultimate goal to provide man with the foundation and skill to adapt to, and to modify, his physical, social and economic environment in order to facilitate his well-being and usefulness. Teaching, research, and public service are vital to the future of a nation and all must receive appropriate support.

Traditionally, these three missions have been considered the province of the four-year colleges and universities. They can no longer be considered an exclusive province of upper division and graduate schools. All institutions of

higher education, including the two-year colleges, have a proper role regarding teaching, research, and public service.

In view of the above, the nation should look at higher education in the next decade from these basic standpoints:

1. The maximum development of human talent through advanced education is a prime matter of public responsibility if the nation is to progress economically, socially, and culturally.

2. As we move into a more complex and technologically advanced society, the nation must strive for higher levels of productivity at all educational levels beyond high school.

   Increased emphasis must be placed on the quality of education as well as on increasing the numbers of people to be educated below the baccalaureate degree level.

3. Appropriate degrees of support must be forthcoming for each of the three functions of higher education, and at each of the various levels of higher education.

4. If the return on our educational investment is to be highly favorable, it will be necessary to base the continuing development of higher education on: constant and comprehensive planning; meaningful policies and clear objectives; and well-coordinated efforts to assure educational effectiveness and reasonable economy of effort.

Some Fundamental Principles

The primary purpose of education is to meet the needs of individuals. Since that which most benefits a free society is the utilization of cultivated talents by individuals who can function effectively, an educational system designed to serve the needs of individuals will best serve the needs of the nation.

A reasonable choice in the selection of the kinds of educational programs to be pursued, as well as reasonable choice of location, must be given to all students interested in postsecondary education, inherent in this choice, however, is the necessity of requiring the student to meet the program entry qualifications within the institution of his choice.

Opportunity to pursue postsecondary education must be available to all students regardless of race, age, religion, sex, or socio-economic status.

Education must be controlled by the citizens of each state, with an adeauqte participation of administrators, professors, and students. The governance of higher education by effective boards of trustees, with the participation of lay and institutional persons, will help to keep it consistent with the needs and interests of society. It also affords the support and protection that will allow professional educators to fulfill their responsibilities for basing decisions and actions on sound educational considerations.

An effective and comprehensive plan for higher education must consider both the public and private sectors of education.

Goals for Higher Education

Among the possible goals for higher education are the following:

1. To provide an educated citizenry by developing individual capacities and cultivating the values, interests, attitudes, talents, intellect, and motivations for effective participation in the socio-economic development of the nation.

2. To provide a pool of well-qualified personnel to meet the manpower needs of the nation.

3. To act as a catalyst in shaping the future economic, cultural, and social progress of the nation.

4. To assure equality of access to all levels of education, and to provide education to meet the diverse needs of the people of the nation.

5. To foster excellence in teaching and research using the best possible facilities in order to provide quality education for all postsecondary students.

6. To encourage and facilitate lifelong learning by adults so that each can better fill the manpower needs in the state, and promote his own development as an educated person. Inherent in this goal is easy entry, exit, and reentry in programs as the needs of adults change.

7. To utilize the resources and expertise of higher education to the fullest

extent in order to most effectively meet the needs of the people.

Development of Academic and Occupational Education

Academic and occupational education should be developed to the fullest extent possible. That is, development should be exercised through governance, organization, staffing, and curriculum as well as philosophically. Only through such a commitment will it be possible to:

1. Provide conditions conducive to up-grading occupational education to a first class status.

2. Provide courses to meet the training requirements of the many semi-professional, technical, and middle management programs that are neither exclusively academic nor totally skill related.

3. Provide an integrated training atmosphere consistent with the characteristics of the working sector and other sectors of society.

4. Provide expanded exploratory opportunities for the undecided and facilitate program changes that will adjust to changes in career objectives.

5. Provide a basis for statewide planning.

6. Provide for a more efficient system by achieving economies of scale.

7. Provide a better match between the economic needs of each state and the skills of persons preparing for job entry.

Role of Institutions

The role of the various institutions should be guided but not limited by a set of rules. Statewide systems of governance should be suficiently flexible to allow individual institutions to be responsive to the changing needs of the economy and of students. Although guidelines should be sufficiently elastic, they should provide the necessary checks and balances to insure that major institutional changes in role shall be coordinated on a state-wide basis to best fill the total needs of each state.

The following are general guidelines for various types of institutions:

1. Role of Public Universities.

   The national and state universities should concentrate on: the pursuit of research in the arts and sciences; preparation of leaders, scholars, scientists, and other professionals, a task which the specialized departments and staff of the universities and graduate schools are capable of carrying out; provision of educational experience for able undergraduate students interested in types of interaction which only universities can offer; and provision of special and highly specialized services to other institutions and groups of the community outside of the university.

2. Role of Public Two-Year Institutions.

   The public two-year institutions should concentrate on; preparation of persons for entry into occupational positions, preparation of students for transfer to four-year institutions, provision of services to meet the non-educational needs of the ckommunity served (e.g., recreational,cultural

planning, and other community services). These opportunities should be directed to all members of society.

3. Private Institutions

Many educators still belive that private universities and colleges have made significant contributions to postsecondary education. The strength of these institutions has been primarily in the following areas: provision of alternatives for those desiring nonsecular educational opportunities; preparation for leaders, scholars, scientists, and other professionals; provision of educational experience for capable undergraduate students interested in diferent types of interaction; and the ability for some to experiment with instructional innovations beyond those generally available to public institutions. The private education sector provides important alternatives for post-secondary education. The continuance of private education is considered to be in the best interest of the nation.

Performance

Constant evaluation procedure should be an integral part of the planning process in order to best meet the future postsecondary needs of the nation. The degree to which priorities and objectives are achieved should be the basis for assessing outcomes.

Performance measurements should be made at all levels: state, institutions, programa, course, and section.

The establishment of effective methods of determining goals and priorities and methods of measuring performance depends on the availability of current and uniform data. Consequently, a systematic procedure for identifying, collecting, standardising, and disseminating essential data for nationwide planning and review processes must be instituted and operated on a continuing basis.

Financing

Financial resources constitute a major problem, for a viable postsecondary educational system cannot exist without a strong elementary and secondary school system. A state cannot abdicate its responsibilities for education from kindergarten through graduate school levels by passing on the costs for education to parents and students, by creating hidden tuition costs at the lower levels and raising tuition costs and fees at the higher levels.

Regardless of the abundance or lack of sources of revenue, each state needs to achieve and equitable means of distributing

these resources, so that all elementary and secondary school students may receive a quality education on as comparable a basis as possible. The same principle should hold above the high school level, except that the burden of tuition costs or fees for individual students should never become excessive. Above the high school level, all public postsecondary educational institutions should be treated alike as regards financing from state sources. That is, the percentages coming from taxes, tuition and fees, and state aid should be relatively the same.

Coordination

In order to utilize the educational resources of each state to the greatest advantage to meet the public need for education, it is important that each state be responsible for coordinating the use of resources and educational programs so that in its system of postsecondary education, the various parts-institutions and programs will be related to each other in such a way as to best meet the needs of the public. Lodging the responsibility for coordination and fiscal management with some state authority must be an important objective.

Institutional Autonomy

While the states should have a clear and definite responsibility for overall coordination and management, state control should not extend to individual institutions. Rather, each institutions should be independent while operating within the dimensions of overall state plans, coordination, and fiscal management. State management should not concern itself with matters related to the management of individual institutions. For example, each institution must have the freedom to select its own staff and to determine the qualifications required for that staff so that it will carry out the programs of the institution to the greatest advantage.

State management must be rightly concerned with the ultimate success and evaluation of the product of individual institutions, but the role of the state should not extend to matters connected with how each institution is to accomplish its objectives.

Planning

Continuos planning to meet the needs of the public for postsecondary education and to efectively utilize the resourses of each state is of great importance. In order to be more effective, the group

designated to carry out the research and planning function should be independent of the group charged with overall manegement of postsecondary education. If such independence is not established, the planning and research function will have its priorities determined by the management group and these may or may not be the ones that are important in terms of the educational needs of the public throughout the state-nor will those priorities necessarily reflect the optimum utilization of the state's educational resources through time.

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Public Participation in Governance

Education is a matter of public concern and the public must participate in both the planning and execution of education. At the same time, there are clearly parts of the educational process in which public participation would not serve the best interests of the public. Is order to best represent the public interest, public participation is vital at state level in terms of the overall planning and evaluation for postsecondary education but not in actual operational activities either at state or institutional level.

Magnitude of Governance

Gobernance of postsecondary education should not result in a great bureaucracy. Rather, recommendations for governance must reflect a streamlining in terms of personnel and cost and assure a strong commitment to efficiency. In addition, there should be built-in provisions for checks and balances, in order to assure the public that the governance system itself has a built-in provision for accountability.

CHAPTER IV

GOVERNANCE AND MANAGEMENT

General Considerations

The provision for adequate governing authority is one of the most significant prerequisities leading to a comprehensive and efficient system of postsecondary education. Diffused and overlapping administrative responsibilities and the lack of overall planning capabilities are serious impediments to achieving goals such as those outlined in Chapter III.

Berdahl has described in much detail the types of governing agencies operating in the United States. The oldest type is the single board for governing all public institutions of postsecondary education in a state. With the increasing emphasis on accountability, there is a tendency among several states to prefer centralized responsibility lodged the single board.

> In practice, researchers on planning and coordination have found that the single board is no more effective in coordination, conserving resources, controlling programs, or in other operations than is the coordinating board. (2)

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(2) Robert O. Berdahl. Statewide Coordination of Higher Education, American Council on Education, Washington, D. C., 1971.

Coordinating boards, which provide for coordination by a superboard and allow existing governing boards to continue to function, have become popular in recent years. In large measure their popularity stems from the relative ease with which they can be established because usually no existing agency is eliminated. The success of coordinating boards has varied a great deal, however, because many have found the "in between role" --i. e., between institutions, groups of institutions and the state-- a dificult one to mold into a successful formula for effective government.

Glenny and Weathersby (3) mention a trend which has created conditions necessitating more authoritative coordination and regulation. This is the great growth of state and community colleges which enroll a majority of the students in higher education and thus command an increased audience in legislatures. Thus, the matter of jurisdiction has become much more important. They quote Berdahl on the present range of agency authority as follows:

> Of the 48 existing agencies 41 have jurisdiction over all or nearly all public higher education in seven state -one with a coordinating board (North Carolina) and six with governing boards (Arizona, Florida, Iowa, Kansas, Mississippi, Oregon) -the junior colleges are coordinated sepa-

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(3) Glenny and Weathersby, op. cit., p. 26.

> rately; and where post high school vocational- technical education is handled outside the junior college or university branch campuses, it is usually not under agency jurisdiction. In six States -three with coordinating boards (Michigan, New York, an Pennsylvania) and three with governing boards (Idaho, Montana, and Rhode Island) -the state Board of Education has been designed as the coordinating agency, and its jurisdiction encompasses not only higher education but also the public school system.
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> . . . more agencies are attempting to incorporate the private sector of higher education in their planning efforts. But as a matter of law, only the State Board of Regents in New York has jurisdiction over the private sector with respect to program approval. In Connecticut, Minnesota, and Missouri, the coordinating boards are empowered by law to request information from private institutions and to make planning recommendations which include the private sector... Federal programs administered by state coordinating agencies are willy-nilly bringing those institutions in the private sector which participate in such programs under agency jurisdiction in these limited areas. (4)

The above brief description of the existing 48 agencies points up the futility of attempting to formulate a universal plan of governance and management for all states. Each state must determine its own mode of governance in terms of its own particular characteristics, for example, the existing arrangement of institutions of higher education. In view of the above, it seemed best to present a Case Study of one state's attempt to arrive at a solution relative to

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(4) Ibid., p. 26

planning and management.

A Case Study: One State's Proposal for Governance and Management

The Kansas Master Planning Commission

The Kansas Master Planning Commission on education was created by the 1970 Kansas Legislature and met for the first time in April 1970. Its mission was to prepare the first phase of a master plan for education for Kansas. The master plan was to outline the goals and objectives of education in Kansas and the first phase was to consist of two parts:

1. Middle level public education - the area between the elementary-secondary school system and the four-year college and university.

2. Private education in two-year and four-year colleges and universities.

Midway through its activities, the scope of activity of the Commission was enlarged to include six state colleges and universities and one municipal university.

The Kansas Master Planning Commission consisted of eleven appointed laymen representing the following educational interests in the state:

(1) community junior colleges, (2) vocational - technical shools, (3) the State Department of Educatión, (4) private or independent colleges, and (5) the State Board of Regents. The author of this volume was the Executive Director of the Commission. At the present time, the State of Kansas has: (1) six state colleges and universities under the State Board of Regents; (2) one municipal university; (3) nineteen community junior colleges, thirteen vocational-technical schools, and one technical institute, all under the jurisdiction of the State Department of Education; and (4) sixteen four-year independent colleges and four two-year colleges. Thus, the total number of postsecondary institutions in Kansas is sixty serving a population of about 2.2. million people.

After two and one-half years the Commission presented its final report to a Special Legislative Committee on Education Master Planning. No action was taken relative to the final report in the 1973 and 1974 sessions of the Legislature. The 1974 session, however, did create a Legislative Educational Planning Committee. Hopefully this new Committee will give serious consideration to the recommendations prepared by the Kansas Master Planning Commission.

A Proposal For Governance and Management

From the Kansas Master Planning Commission's point of view, both types of agencies (single board and coordinating board) possess inherent weaknesses which cause them to be less than adequate. Both lack objetive planning and effective communication relative to state priorities with the legislature and executive branch of state government.

Both are weak in not providing a system of checks and balances in planning and management. Both have been unable to measure educational output for a number of reasons: a "closed" system of planning and management, an absence of checks and balances, and a lack of a strong channel to communicate the public interest in educational output.

Accordingly, the Commission chose not to consider either of these two general types of governing agencies in making its recommendation. Rather, its recommendation was conditioned by the philosophical considerations coutlined in Chapter III: independent long-range planning, effective management of state interests, institutional independence within the state system, built-in provision for checks and balances, and clear and effective channels for expression of the public interest.

In view of the above, the Kansas Master Planning Commission considered the choice of two entities: (1) a State Commission and (2) a Management Agency.

A State Commission. The most important assignment of the State Commission would be the annual development of a comprehensive plan to serve the many and diverse needs for postsecondary education. The plan would include the identification of needs, statement of goals and objectives, a broad ordering of priorities, and overall estimate of costs, and strategies for allocating resources.

In developing such plans, the State Commission would request information, data, and comments from all those concerned with the progress and vitality of postsecondary education, who represent a broad spectrum of activities. It is most important that the State Management Agency provide a continuing stream of analysis on the implementation and effectiveness of past plans, as well as an evaluation of the present position of postsecondary education. Each individual institution, both public and private, should also supply an analysis of the implementation of its role, including its effectiveness and any problem encountered. The State Board of Education should provide information regarding coordination procedures and problems connected with elementary and secondary

schools.

As part of its planning activities, the State Commission should also develop a statewide plan for the expansion and improvement of postsecondary education programs in community colleges. The term "community college" is defined in the Federal Education Amendments of 1972 as "any junior college, postsecondary vocational school, technical institut, or any other institution (which may institution of higher education or a branch there of)" which (a) is legally authorized to offer postsecondary education; (b) admits high school graduates or equivalent; (c) provites a two-year program leading to an associate degree, or acceptable for credit toward a bachelor's degree, and also provides postsecondary vocational, technical, occupational, and specialized education programs; (d) is public or non-profit; and (e) is accredited. (5)

The State Commission shoul establish an Advisory Council on Community Colleges to assist and advise the State Commission. The Advisory Council should be composed of: (a) a substantial number of persons responsible for the operation of community colleges, (b) representatives of state agencies having responsibility

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(5) U.S. Congress, Senate, Education Amendments of 1972, 92nd Congress, 2d Sess., 1972, Title X, Part.A., Sec. 1018.

for, or interest in, postsecondary education, and (c) the general public.

The State Commission should direct particular attention to planning for occupational training. Such planning should include: (a) assessment of existing staff and facilities for postsecondary occupational training in relation to existing institutions --community and private junior colleges, area vocational - technical schools, accredited proprietary schools, and public and private colleges and universities; (b) development of a long-range strategy for giving occupational training appropriate emphasis in elementary and secondary schools; and (c) development of procedures to ensure continuous planning and evaluation including regular data collection. (6).

In planning vocational training activities, the State Commission should provide for the active participation of the State Management Agency; the State Board of Education; representatives of all types of institutions capable of engaging in postsecondary occupational training; representatives of nonprofit elementary and secondary schools; the Kansas Department of Labor; the Kansas Economic

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(6) Ibid., Part B, Sec. 1056

Development Commission; persons involved in occupational training for the underprivileged, handicapped and minority groups; and representatives of business, industry, organized labor, agriculture and the general public. (7, 8).

The State Commission should submit its recommended plan to the Legislature for consideration and action. At the same time, the plan recommended should be presented to the Governor, the State Management Agency, the State Board of Education, and the general public. Following the process of hearing and consideration by the Legislature and Governor, the plan, with any changes would become the adopted plan for funding and operation.

Planning should be a continuing process for the State Commission. On or before July 1, of each year, the State Commission would submit to the Governor and the Legislature an annual comprehensive plan for the two-year period following the planning year. This plan would be considered by the Governor and the Legislature, after

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7) U.S. Congress, Senate, Education Amendments of 1972, 92nd Congress, 2d Sess., 1972 Title X, Part B, Sec. 1055.

8) The definition of the role of the State Commission relative to the State Vocational Advisory Council is expected to be clarifled by the guidelines for implementation of the Federal Education Amendments of 1972.

which, the State Management Agency would prepare an overall budget representing the programs of all the institutions, as provide by the plan, and submit the same for consideration and action by the Governor and the Legislature.

The staff of the State Commission should be oriented towards research and planning. The dynamic effect of the entire assignment of the State Commission would be the result of continued planning for a comprehensive, interrelated, responsible, and responsive system of postsecondary education. The staff of the State Commission should embrace this role and forsake any ambitions regarding the administration of the system. Skills and experience in research and planning, especially in concepto development, measurement methods, statistical analysis, and projection techniques, are essential to the successful fulfillment of the role of the State Commission. The Commission's staff should be headed by a "Director of Research and Planning".

State Management Agency. The primary function of the State Management Agency would be the management of the state's interest in postsecondary education. In carrying out its function, the State Management Agency would implement the state plan for postsecondary education; assemble and coordinate budget estimates

embracing all institutions for consideration by the Governor and the Legislature relative to an adopted state plan; and provide continuing evaluation of the past experience with state plans in order to provide information for the State Commission.

In implementing the state plan and providing overall budget estimates the State Management Agency would proceed by formulating guidelines for achieving the objectives of the state plan in the following areas: academic, vocational and technical, professional and graduate, medical and health care, and others as might from time to time be required. The guidelines would provide directions for the individual institutons in developing programs tailored to fit the individual goals and objectives of each institution and the needs of those it serves. The merits of these programs, measured by guideline statements of needs and objetivies, with promises of innovation, and cost effectiveness, would provide the basis for program approval at the various institutions.

The process of program approval, however, should be separated from the process of institutional budget approval. The approval of a program by State Management Agency would not automatically mean that it would subsequently be funded. Accordingly, the State Management Agency should develop a system of priorities for

funding approved programs, consistent with those of the adopted state plan. This would tend to ensure that, at any level of funding for postsecondary education, those approved programs with comparable priority among the various institutions would be implemented.

The State Management Agency should have sole responsibility for fiscal management, including all federal funds for postsecondary education.

The budget for all of postsecondary education should be a combined budget for all institutions as a whole and should not consider individual institutions separately.

The State Management Agency, in carrying out the responsibilities in Part B, Section 1055 of the Education Amendments of 1972 would have sole responsability for fiscal management and administration of programs developed under this part. The State Management Agency would adopt administrative arrangements to assure the U. S. Commissioner of Education that: (a) administration of the approved plan provides adequate consultation and review by individuals involved in the development of the plan; (b) the State Advisory Council for Vocational Education is charged with the same responsibilities for programs as in the Vocational Education Act

of 1963, as amended in 1968; and (c) provision for appeal to the State Management Agency is established and maintained. (9)

The State Management Agency would maintain direct channels of communication and management control with each individual institution. No body or organization should intervene between the State Management Agency and the governing board of any institution. Also, the State Management Agency should provide for an appeal and hearing for any institution with respect to guidelines, policies, procedures, programs, budgets, and resource allocation.

The staff of the State Management Agency should be skilled in management techniques. It would carry the responsibility for developing the operational content of the state plan, for devising means of monitoring institutional performance relative to the plan, and carrying out fiscal administration. The staff should not attempt to provide the special skills needed for programs approval and evaluation in all fields. Such a course would be too expensive. The concept of a temporary "committee of scholars" --properly selected and identified for the particular task-- should by employed to extend the staff's skills when necessary. The staff would be

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9) U. S. Congress, Senate, Education Amendments of 1972, 92d. Congress, 2d Sess., 1972, Title X, Part B, Sec. 1055.

headed by an "Executive Director".

The two senior staff positions in the State Commission and in the State Management Agency should be equal in terms of responsibilities and contribution to the effectiveness of postsecondary education. Salary levels for each should be comparable to salaries of chief executive officers of the largest universities in the state.

Individual Institutions. Each public institution should be governed by a board of trustees. Each of the institutions presently governed by the Board of Regents plus the municipal university should have a board of trustees appointed by the Governor with the advice and consent of the Senate. For each of the other remaining or merged institutions the governing board should be elected from the geographic area served.

The board of trustees is responsible for the role of the institution within the state system of postsecondary education. The responsibiblities of the board of trustees include policy, budget, programs, and stafing. It is important to the well-being of postsecondary education that the boards of trustees maintain the autonomy of the institutions. The state has an altogether different function - that of providing a comprenhensive framework within which the institutions will be able to effectively and efficiently meet state goals

for postsecondary education.

The Case of Colombia

In the case of Colombia, there is a government agency, the Colombian Institute for the Promotion of Higher Education-ICFES, which is in charge of advising higher education institutions on planning academic, administrative and financial matters, at the same time, it is the government office responsible for the evaluation and inspection of higher education.

The Policies and activities of ICFES are determined by the decisions made by the Board of Directors, which is composed of those individuals who are best qualified to make decisions concerning higher education in Colombia. The eight members of the Board of Directors include four university rectors elected by the entire body of rectors of the Colombian universities, and four representatives of the National Government, namely, the Minister of Education, the Director of ICETEX and two representatives of the President of Colombia. The main responsibilities of the Board of Directors are those of studying and approving plans for technical, economic and administrative assistance and any other services offered to higher education.

The Director of ICFES, who acts on behalf of the President in the administration of the institute, is also the Institute's legal representative.

The Director is responsible for planning and carrying out policies and activities in accordance with the decisions of the Board of Directors and with legal and statutory provissions.

In order to develop its different activities ICFES has the following main offices and Divisions:

Planning Office:

The main task of this office is that of studying all plans for higher education in the country. For this reason it is in constant touch with government agencies such as the Ministry of Education, the Ministry of Labor, the National Planning Department, and the planning offices of the different universities.

The staff of this office includes economists, statisticians and other professionals who study the plans for the harmonious progress of higher education throughout the country and advise the institutions on the preparation and evaluation of their own development plans.

Finance Office:

The principal aim of this office is to study the ways and means by

which higher education is financed, to see to a just distribution of the national budget and to encourage the development of education to meet the needs of the nation is this field.

Through this office, ICFES encourages higher education centres to make the best use of national and international credit in planning their economy. It also advises the institutions on how to improve their financial status.

Division for Promotion and Evaluation of Academic Programs:

This unit is in charge of the evaluation and assessment of higher education centres in academic matters. It formulates and applies norms and criteria for the evaluation of academic programs and the ratification of higher education institutions. These criteria are obtained throung inspections and other forms of analysis. The Division submits its opinion on the results of the analyses to the Board and the Director.

Licenses which permit higher education centres to function legally, are issued by this office. It also communicates its opinion on the recognition of programs and the ratification of higher education centres to the Minister of Education.

The formulation of norms and criteria for evaluations is carried

out with the help of advisory committees composed of highly qualified individuals in the field of university education. The Colombian Association of Universities contributes efficiently to the integration and coordination of these valuable groups.

Through the activities of the Division for Promotion and Evaluation, of Academic Programs ICFES tries to stimulate Colombian universities to attain higher academic standards, through constant guidance and technical assistance.

Tests and Orientation Division:

It is the duty of this division to prepare carefully, administrate and evaluate examinations, the results of which may be used by the universities and other higher education centres in the selection, orientation and classing of students. It must study thoroughly all that is relevant to higher education, admission systems, and academic achievement, and be able to inform students on these matters.

This office also deals with the development of service by which students may receive advice and guidance on higher education and orientation on professions.

Its main activity is the program known as "National Testing

Service", which administers aptitude tests and academic examinations twice a year for students who wish to attend higher education centres. These take place simultaneously in al the main cities and towns of the country. The results are used by the educational institutions as a means of selecting, classing and evaluating students.

Documentation and Libraries Division:

This Division is in charge of the technical assistance which is given to higher education institutions in documentation and library services, in order to develop a national system of information in the field of higher education and a national catalogue of periodicals and university library books and facilities.

Special Services Division:

This Division is in charge of giving technical assistance to institutions of higher of higher education in special projects for the development and promotion of higher education of higher education; it is also responsible for the offering of services common to the different institutions (such as laboratories and edition of textbooks) and providing for the welfare of higher education institutions communities. The Colombian Association of Universities and ICETEX (Colombian institute for Educational Loans and Training

abroad) collaborate with ICFES in the above programs and in the coordination and administration of the plans for these activities.

In a series of bulletins published by ICFES, Acero has analyzed some of the problems facing higher education institutions in Colombia. (10).

Topics such as university organization and administration, university decision-making, decision-making, and composition of boards and committees and main activities were studied and analyzed.

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10) Hernán D. Acero. "Análisis de la Universidad como un Sistema de Organización Administrativo-Docente". ICFES, Serie Documentos de Divulgación No. 2, Bogotá, 1974.
"Un Modelo de Toma de Decisiones para la Universidad". ICFES Serie Documentos de Divulgación, No. 6, Bogotá, 1974.

CHAPTER V

ENROLLMENT FORECASTING: AN ESSENTIAL INGREDIENT IN PLANNING FOR HIGHER EDUCATION

INTRODUCTION

Any appraisal of postsecondary education, whatever tis focus, is affected by enrollment trends for these in part determine the continuance of programs or the introduction of new ones, the staffing of colleges and universities, and the costs associated with the maintenance of staff and programs. Despite predictions of more college students in the years ahead, many of the largest colleges and universities are now experiencing stabilizing enrollments. But what of the smaller public and private institutions or those located in areas of little population growth? A Newseek article states:

> There are dark shadows of despair on the campuses of many U.S. colleges this year-shadows that deepen almost daily as enrollments dwindle, donations decline and costs skyrocket. (1)

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(1) Newsweek, January 14, 1974, p.58

Accompanying the phenomenon of stabilizing or decreasing enrollments is the problem of tightening budgets for: (1) education is a service oriented enterprise and unlike industry, education cannot offset increases in cost by increases in productivity made possible by automation; (2) inflation is a factor closely related to the fact that education in service intensive and the higher the rates of inflation, the more profound the impact of this factor; and (3) a university must maintain its programs, regardless of slight drops in enrollment. (2)

The above is an illustration of the problems associated with trends in enrollment. Morisseau states:

> Almost to a man, conference speakers touching on the subject agreed that there had been too little contingency planning. C. Raymond Calhoun, vice chancellor for plans and development of the Minnesota State College System, argued that the variables in enrollment prediction make it "impossible to provide dependable and accurats estimates for the future". Accordingly, he added, "prudent planning dictates that alternate enrollment assumptions be examined and their probable impact determined". Or, as duToit put it, "It is the planner's job to learn how to eliminate surprises".
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> Enrollment levels of course, are not the only factor in the current crisis in higher education. Money is in short supply; state legislature and funding agencies are demanding greater accountability in the eyes of both governments and the

(2) University of Minnesota Financial Report 1973, p. 7

> public. The result, according to Calhound, is that the "external presures requiring colleges and universities to become more deeply involved in the planning processes are inexorable". (3)

During the past decade, many states have undertaken the task of developing master plans for postsecondary education and Kansas was no exception. As early as 1970, the Kansas Master Planning Commission predicted a decline in the number of high school seniors. (4) At that time we did eliminate the surprise as duToit put it. (5) Few persons took the prediction seriously. The rest of this chapter illustrates how one state, namely Kansas, attacked the problem of pradictiong the number of high school senior of potential college and postsecondary enrollees as well as the number of students in the four types of institutions of higher education. The predictions during the past five years have been amazingly accurate and the author will continue his predictions again next year for

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(3) James J. Morisseau. "For Planners, That Shrinking Feeling". Planning for Higher Education, Vol. 3, No. 5: 4/4, October, 1973 (Published by Educational Facilities Laboratories, Incl., New York, N.Y.)

(4) Kenneth E. Anderson. Proyection:Grade Twelve Emprollments in Kansas Public and Private High Schools, 1970-71 to 1986-87. Kansas Master Planning Commission. Topeka, Kansas, December 1970, 57 pp.

(5) Morisseau. op. cit.

the new Kansas Legislative Educational Planning Committee.

The statistical methodology used is given in some detail, due to the fact that the demand for the publication noted in footnote 4 has been heavy. Only recently, several states and universities have requested complete details on the techniques used. The sections that follow were prepared to answer these inquiries.

Predicting the Number of Potential College and Postsecondary Enrollees

The analitical procedure used to forecast the number of high school seniors was the cohort survival method. It is a relatively simple method which may be used for a single school district, but the process becomes laborious when one wants to predict the number of high school seniors for: (1) several school districts, (2) several geographic regions within a state, and (3) the state as a whole. The only feasible way to accomplish the three forecasts was to gather the historical data and employ or prepare a computer program fort the task. This was done and has been employed for five successive projections for the years: 1970, 1971, 1972, 1973, and 1974.

The cohort survival method involves the computation of survival

ratios. A survival ratio is the proportion of students from one grade level that proceeds to the next grade level one year later. For example, if the third grade of a given year is larger than the second grade of the preceding year, the survival ratio would exceed 100 and indicate that a net inmigration had occurred. However, if the third grade is less than the second grade of the preceding year, the survival ratio would be less than 100, indicating that attrition from autmigration, transfers, and dropouts more than offset any inmigration. The computer printour for a typical school district from the first projection is shown in Table 1. A few words of explanation are appropriate to indicate how the survival ratios and number of seniors were obtained. The process carried out by the computer to yield an average survival ratio (grade one to grade two) is as folows:

1. Number in grade 2 in 1970 divide by number in grade 1 in 1969: 601/630 = 0.9539
2. Number in grade 2 in 1971 divided by number in grade 1 in 1970: 594/604 = 0.9834
3. Number in grade 2 in 1972 divided by number in grade 1 in 1971: 544/542 = 1.0036
4. Sum of 0.9539, 0.9834, and 1.0036 divided by three: 2.9409/3 = 0.980

The process carried out by the computer to yield the number of senior in 1973 is as follows:

1. Number of students in grade 11 in 1972 multiplied by the survival ratio for grade 11 to 12: $570 \times 0.916 \doteq 522$

The process carried out by the computer to yield the number of seniors in 1974 is as follows:

TABLE 1

COMPUTER PRINTOUT FOR A TYPICAL SCHOOL DISTRICT

	Enrollment in Grades											
Year	1	2	3	4	5	6	7	8	9	10	11	12
1969*	630	633	676	670	609	577	603	625	632	601	560	495
1970*	604	601	618	663	643	618	640	596	621	645	591	520
1971*	542	594	583	625	637	645	616	599	554	612	602	538
1972*	532	544	576	562	594	621	666	597	585	565	570	547

Survival Ratios		Number of Seniors	
Grade 1 to 2:	0.980	1973:	522
Grade 2 to 3:	0.972	1974:	491
Grade 3 to 4:	0.985	1975:	513
Grade 4 to 5:	0.957	1976:	506
Grade 5 to 6:	0.998	1977:	544
Grade 6 to 7:	1.046	1978:	531
Grade 7 to 8:	0.964	1979:	506
Grade 8 to 9:	0.967	1980:	458
Grade 9 to 10:	1.009	1981:	463
Grade 10 to 11:	0.949	1982:	425
Grade 11 to 12:	0.916	1983:	407

*Enrollments in the twelve grades are reported on September 15 of each year.

1. Number of students in grade 10 in 1972 multiplied by the survival ratio for grade 10 to 11: 565 x 0.949 = 536
2. Number of seniors in step 1 multiplied by the survival ratio for grade 11 to 12: 536 x 0.916 = 491

The process for 1975 would have required three multiplications and the process for 1983 would have required eleven multiplications. This illustrates the labor involved if a hand calculator had been employed.

In the computer program, the enrollments for each of the 310 school districts for grades 1 to 12 for four years are punched on cards and the carrying out of the program by the computer yields data similar to that shown in Table 1 for: (1) school districts, (2), regions, and (3) the state as a whole. Table 2 and 3 respectively show the average grade-to-grade survival ratios and the projected twelfth grade enrollments for the eleven regions and for the State of Kansas as a whole as obtained from the first projection completed in 1970. Table 2 shows the projections to 1980-81. These were extended to 1986-87 as shown in the first projection in Table 5. First, let us examine the number of live births by mothers in the

state as shown in Table 6. The declining number of girths from 1960 through 1963 are reflected in the number of decreasing twelfth graders from 1977-78 on. What will be the effect of the number of recorded births for the years 1964 through 1969 on the enrollment in grade twelve from 1981-82 through 1986-87?

In order to provide some realistie estimates, it was necessary to calculate the percentage of children born in 1960, 1961, 1962, and 1963 who reached the first grade in 1966-67, 1967-68, 1968-69, and 1969-70.

Table 7 indicates how the average percentage was determined.

Once the average percentage was obtained as shown in Table 7, the next step was that of determining the number of children in the first grade for the school years 1970-71 through 1975 - 76. Table 8 shows the method of determining the number of first grades. Assuming that the average survival ratios determined previously for 1969-70 (see Table 4) by the cohort survival method for the state as a whole will remain the same for the years under consideration, multiplication of these by the estimates of firts grade enrollments for 1970 - 71 through 1975 - 76 yielded estimates of the twelfthe grade enrollments for the years indicated below:

TABLE 2

AVERAGE SURVIVAL RATIOS GRADE TO GRADE
BY REGIONS AND FOR THE STATE AS A WHOLE*

Grade to Grade	REGION 1	2	3	4	5	6	7	8	9	10	11	Total State
1 to 2	98.1	97.7	96.5	95.3	93.8	98.2	96.8	97.4	97.5	95.4	96.4	96.7
2 to 3	100.1	100.6	97.3	96.9	98.1	97.6	98.9	98.1	99.7	98.7	101.6	98.8
3 to 4	100.1	99.3	98.5	96.8	98.5	98.8	98.5	101.5	97.5	101.9	97.7	98.7
4 to 5	100.3	101.9	98.2	97.5	99.3	99.3	100.1	100.2	100.8	99.2	101.7	99.4
5 to 6	100.7	101.3	97.8	98.3	99.1	97.9	98.4	100.0	100.8	102.0	99.4	99.6
6 to 7	102.7	102.2	101.0	100.0	101.2	101.4	101.4	104.4	106.0	103.8	104.8	101.9
7 to 8	100.7	101.4	99.3	99.3	100.4	99.7	100.0	99.1	99.2	100.7	100.1	100.1
8 to 9	103.0	104.2	104.1	99.8	108.4	106.4	100.1	105.8	96.2	102.0	110.8	102.4
9 to 10	101.5	98.6	96.8	98.2	99.0	100.4	98.2	98.1	97.7	99.3	98.9	99.3
10 to 11	94.9	96.8	96.6	94.3	96.4	98.0	96.1	97.4	97.6	97.8	97.1	95.6
11 to 12	92.9	92.9	95.5	88.5	95.1	95.7	93.3	95.0	97.2	96.0	94.9	92.5

* Based on the enrollments in grades 1 to 12 in 310 school districts as of September 15 for the years 1966, 1967, 1968 and 1969.

TABLE 3

PROJECTED TWELFTH GRADE ENROLLMENTS* BY REGIONS AND FOR THE STATE AS A WHOLE USING COHORT SURVIVIAL METHOD

School Year	Region 1	2	3	4	5	6	7	8	9	10	11	Total State
1969-70**	10,602	2,828	2,509	8,802	1,533	748	1,403	820	1,535	1,598	1,483	33,861
1970-71	11,098	2,857	2,563	9,611	1,524	803	1,460	746	1,468	1,708	1,406	35,255
1971-72	11,554	2,953	2,594	9,559	1,504	855	1,488	778	1,498	1,648	1,459	35,893
1972-73	11,808	2,867	2,571	9,314	1,520	819	1,460	740	1,557	1,786	1,425	35,833
1973-74	12,233	2,963	2,608	9,610	1,471	852	1,479	766	1,484	1,785	1,524	36,737
1974-75	12,433	3,031	2,701	9,600	1,451	738	1,476	778	1,373	1,870	1,503	36,908
1975-76	12,780	2,949	2,601	9,146	1,298	798	1,384	737	1,443	1,781	1,415	36,209
1976-77	13,128	3,016	2,583	9,277	1,322	754	1,486	737	1,449	1,891	1,450	37,027
1977-78	13,443	2,947	2,622	8,848	1,314	788	1,473	734	1,393	1,899	1,517	36,812
1978-79	13,212	2,917	2,449	8,352	1,223	752	1,416	739	1,315	1,814	1,379	35,337
1979-80	13,078	2,838	2,392	7,953	1,165	751	1,452	696	1,261	1,777	1,401	34,481
1980-81	12,456	2,765	2,273	7,486	994	677	1,292	632	1,241	1,653	1,326	32,492

NOTE - Regional and Total projections were computed independently; therefore, the sum of the enrollments for the eleven regions in each row do not precisely equal the value in the last column.

*September 15th enrollment data.

**The data in the 1969-70 row are actual enrollment data; all other rows are projected data.

TABLE 4

AVERACE SURVIVAL RATIOS GRADE TO GRADE FOR

THE STATE AS A WHOLE

Grade to Grade	1969-70*	1970-71**	1971-72***	1972-73****	1973-74*****
1 to 2	96.7	97.0	97.2	97.4	97.3
2 to 3	98.8	98.8	98.6	98.6	98.4
3 to 4	98.7	98.8	98.7	98.9	98.5
4 to 5	99.4	99.3	99.1	99.3	99.2
5 to 6	99.6	99.5	99.4	99.4	99.3
6 to 7	101.9	101.8	101.6	101.7	101.8
7 to 8	100.1	99.8	99.6	99.6	99.6
8 to 9	102.4	101.7	101.1	100.9	100.7
9 to 10	99.3	99.0	99.2	99.3	99.0
10 to 11	95.6	95.4	95.1	94.5	93.0
11 to 12	92.5	91.2	89.9	88.9	86.5

* First projection, August of 1970.
** Second projection, August of 1971.
*** Third projection, August of 1972.
**** Fourth projection, January of 1973.
***** Firth projection, February of 1974.

Enrollments in grades 1 to 12 for each of the 310 school districts were used for the years: (1) 1966, 1967, 1968, and 1969 for the first projection; (2) 1967, 1968, 1969 and 1970 for the second projection; (3) 1968, 1969, 1970 and 1971 for the third projection; (4) 1969, 1970, 1971, and 1972 for the fourth projection; and (5) 1970, 1971, 1972, and 1973 for the fifth projection.

TABLE 5

PROJECTED TWELFTH GRADE ENROLLMENT FOR THE STATE AS A WHOLE

School Year	Projection					Harmonic Mean of the Five Projections
	First	Second	Third	Fourth	Fifth	
1969-70	33, 861*	33, 861*	33, 861*	33, 861*	33, 861*	
1970-71	35, 255	34, 614*	34, 614*	34, 614*	34, 614*	34, 742
1971-72	35, 893	35, 243	34, 498	34. 498*	34, 498*	34, 916
1972-73	35, 833	35, 203	34, 541	33, 294*	33, 294*	34, 400
1973-74	36, 737	35, 618	35, 219	34, 206	32, 215*	34, 732
1974-75	36, 908	35, 765	34, 925	34, 337	32, 011	34, 713
1975-76	36, 239	35, 151	34, 412	33, 737	31, 926	34, 233
1976-77	37, 027	35, 869	35, 054	34, 399	32, 700	34, 948
1977-78	36, 812	35, 652	34, 732	34, 146	32, 501	34, 705
1978-79	35, 337	34, 332	33, 392	32, 831	31, 248	33, 369
1979-80	34, 481	33, 461	32, 493	32, 000	30, 416	32, 510
1980-81	32, 492	31, 630	30. 616	30, 187	28, 727	30, 675
1981-82	30, 844	29, 943	29, 197	28, 729	27, 117	29, 110
1982-83	27, 887	26, 950	28, 509	28, 215	26, 658	27, 624
1983-84	25, 761	24, 894	24, 718	26, 223	24, 581	25, 219
1984-85	24, 844	24, 007	23, 839	23, 770	23, 790	24, 044
1985-86	25, 266	24, 419	24, 243	24, 175	23, 687	24, 346
1986-87	26, 458	25, 572	25, 390	25, 316	24, 806	25, 496
1987-88		26, 288	26, 102	26, 025	25, 501	25, 977
1988-89			23, 824	24, 520	24, 028	24, 122
1989-90				23, 836	22, 123	22, 949
1990-91					22, 021	22, 021

* Actual enrollments as of September 15.

Projected enrollments between the upper staircase line and the lower staircase line were obtained by means of the survival ratio method.

Projected enrollments below the lower staircase line were obtained by converting the number of births to estimates of the first grade enrollments and then converting these to twelfth grade enrollments by means of the survival ratio method.

TABLE 6

NUMBER OF LIVE BIRTHS BY MOTHERS

RESIDING IN THE STATE

Year	Number	Year	Number
1959	52,529	1966	36,190
1960	50,782	1967	34,901
1961	49,988	1968	35,496
1962	48,725	1969	37,172
1963	45,991	1970	38,215
1964	43,333	1971	36,006
1965	39,178	1972	33,176

TABLE 7

AN ESTIMATE OF THE AVERAGE PERCENTAGE OF CHILDREN BORN IN 1960, 1961, 1962, AND 1963 REACHING THE FIRST GRADE IN 1966, 1967, 1968, AND 1969

Year Born	Number of Births (1)	Number in First Grade* (2)	School Year	Percentage (2) / (1)
1960	50,782	43,127	1966-67	84.93
1961	49,988	41,270	1967-68	82.56
1962	48,725	40,209	1968-69	82,52
1963	45,991	37,946	1969-70	82,51

NOTE - Average Percentage = 83.13. This percentage is not a precise estimate for children who reach age six after September 1 are not eligible to enter the first grade. It is assumed that the number born after September 1 in the year prier to the year under consideration does not vary greatly from the number born after September 1 of the year under consideration.

* September 15 enrollment data.

1981-82	30, 844
1982-83	27, 887
1983-84	25, 761
1984-85	24, 844
1985-86	25, 266
1986-87	26, 458

These projections appear in Table 5 under the column entitled first projection.

TABLE 8

ESTIMATES OF THE NUMBER OF CHILDREN IN THE FIRST GRADE FOR THE SCHOOL YEARS 1971-72 THROUGH 1975-76

Year Born	Number of Births	Average Percentage	Estimate of Number in First Grade**	School Year
1964	43, 444 x	83.13=	36, 023	1970-71
1965	39, 178 x	83.13=	32, 569	1971-72
1966	36, 190 x	83.13=	30, 085	1972-73
1967	34, 901 x	83.13=	29, 013	1973-74
1968	35, 496 x	83.13=	29, 508	1974-75
1969	37, 172 x	83.13	30, 901	1975-76

* From Table 7

** September 15 enrollment data.

Table 4 shows the average survival ratios for five successive years. Table 5 shows the projected twelfth grade enrollments for the state as a whole for five successive projections. A word of explanation is in order regarding the projections below the staircase line in Table 5. These were obtained by converting the number of births to

estimates of the first grade enrollments and the converting these to twelfth grade enrollments by means of the survival ratio method. This step allowed the projections to be extended six more years. These extensions are subject to a greater degree of error than the projections between the upper and lower staircase lines. The section entitled Predicting College and University Enrollments will explain the use of the harmonic means appearing in Table 5.

Table 4 shows the survival ratios for five successive years. Although the survival ratios are quite similar across the five projections, there appears to be a downward trend in survival ratios across the five projections from grade 10 to grade 11 and from grade 11 to grade 12. This may indicate one of three things at these grade levels: (1) an outmigration of students, (2) a dropping out of students, or (3) attendance at proprietary or vocational-technical schools.

Whatever the reason or combination of reasons, there is a progressive drop in the number of seniors from the first to the fifth projection for most of the years. Also, the projections are based on input data from all of the school districts which report to the State Department of Education as of September 15 of each year. Some of the school districts do not classify "special education" students in grade levels in the first eight grades and some schools

operate on the "non-graded" concept especially in the primary grades. These two tendencies not to classify students in grade levels seems to have increased some over the past decade which makes the cohort survival method somewhat less realiable and may also account for the deveasing number of seniors across the five projections.

Regardless of the reasons, the decreasing trend in the number of seniors is with us and thus the colleges and universities must obtain their future students from a decreasing pool of potential students. This can be counteracted by carrying out the following: (1) curriculum reform, (2) tap new students from the ranks of the non-traditional learners, and (3) retain more students from the freshman through the senior year.

Predicting College and University Enrollments

Trend in birth data tend to be relfected in future enrollments in elementary and secondary schools. Table 9 demonstrates the relation-ship existing between the number of births and the number of high school seniors. Most of the children born in 1960 should have entered the twelfth grade in 1966 and assuming normal progress, many of these first graders will enter the twelfth grade in 1977 or seventeen years after birth. The same kind of statement can be

made for those born in 1961 through 1966. It is obvious that the rank order correlation coefficient in Table 9 between number of seniors is 1.00. The product-moment of correlation for the same data was .972. Thus, it can be said that the number of births is a factor in the phenomenon of declining enrollments. However, the number of births is not the sole culprit. "Perhaps the least understood set of influences that contribute to the crisis of shrinking enrollments is the changing attitudes of students and their parents toward the educational establishment". (6) Stoltz speculates: (1) there

TABLE 9

RELATIONSHIP BETWEEN THE BIRTHS AND

HIGH SCHOOL SENIORS IN THE STATE

Births		High School Seniors**	
Year	Number	Year	Number
1960	50,782	1977	34,145
1961	49,988	1978	32,831
1962	48,725	1979	32,000
1963	45,991	1980	30,187
1964	43,333	1981	28,729
1965	39,178	1982	28,215
1966	36,190	1983	26,223
* See Table 6.		rho = 1.00	
** See Table 5.		r = .972	

(6) Speech made by Robert E. Stoltz, Regional Director of the College Entrance Examination Board, Atlanta, Georgia, at the Regional Meeting of Its Membership, Jacksonville, Florida, February 21, 1973.

is a growing conviction on the part of both parents and students that a college degree is not as important an acquisition as it once was; (2) you don't have to enter college right after graduation from high school; (3) there is nothing wrong with going to a proprietary school for your education; (4) parents are not pushing their youngsters toward college in quite the same ways as before; and (5) some parents undoubtedly don't like what they see at colleges now. Stoltz states further:

> But the picture is not an entirely gloony one. While there may be shortages of the traditional students there is clearly no shortage of non-traditional learners. As the Commission on Non-Traditional Study carried out its work, it attempted to estimate the number of "learners" in the United States that are engaged in or might be potential candidates for non - traditional learning opportunities.
>
> ... There are also new students to be found among the ranks of former students. I get the distinct impression that during the 60's we tended to lose interest in retention rates and questions of holding power. I sense a renewed interest in this problem and we should welcome it. (7)

Should the colleges and universities carry out curriculum reform, tap new students from the ranks of non-traditional learners, and work at the problem of retaining more students, then the conditions being experienced with regard to enrollments may represent a

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(7) Ibid.

temporary phenomenon as far as decreases are concerned. Regardless of what happens, it must be made clear that forecasting an enrollment for a specific college is a hazardous task. Projecting trends for all colleges and universities or a group of colleges within a state involves less risk.

Before attempting to forecast college enrollments, let us examine Table 10. Note the heading 'six-year periods". This quantity was used as the independent variable for two reasons: (1) it produced a higher correlation with the variable Y (total head count enrollment) than did the independent variables X_1 and X_2; and (2) it produced a higher estimated total head count enrollment for 1975-76 than did the independent variable X_3 (five year periods). The total head count enrollment in 1974-75 was 108,289 which may be an over-inflated figure due to the strenuous outreach efforts by a number of colleges and universities including the public two-year community colleges. Too, the rationale behind the "six-year periods" was that: (1) the high school seniors of 1963-69 and 1969-70 represented potential fifth-year, non-traditional, and graduate students in 1974-75; (2) the high school seniors of 1970-71 represented potential college seniors in 1974 - 75; (3) the high school seniors in 1971 - 72 represented potential college juniors in 1974-75; (4) the high school seniors in 1972-73 represented potential sophomores in 1974-75 and

TABLE 10

ENROLLMENTS IN GRADE TWELVE IN THE STATE FROM 1951-52 TO 1990-91
AND TOTAL HEAD COUNT ENROLLMENTS IN ALL INSTITUTIONS
OF HIGHER EDUCATION FROM 1955-56 TO 1974-75

School Year	Grade Twelve (X_1)*	Four-Year Periods (X_2)	Four-Year Periods (X_3)	Four-Year Periods (X_4)	School Year	Total Head Count Enrollment (Y)
1951-52	18,537					
1952-53	19,052					
1953-54	19,383					
1954-55	19,616	76,588**			1955-56	38,049
1955-56	20,641	78,692	97,229***		1956-57	41,781
1956-57	20,401	80,041	99,093	117,630****	1957-58	43,282
1957-58	21,017	81,675	101,058	120,110	1958-59	45,083
1958-59	21,883	83,942	103,558	122,941	1959-60	46,647
1959-60	23,970	87,271	107,912	127,528	1960-61	49,538
1960-61	25,915	92,785	113,186	133,827	1961-62	54,284
1961-62	25,034	96,802	117,819	138,220	1962-63	57,744
1962-63	24,452	99,371	121,254	142,271	1963-64	60,536
1963-64	28,984	104,385	128,355	150,238	1964-65	69,465
1964-65	33,780	112,250	138,135	162,135	1965-66	78,115
1965-66	33,122	120,338	145,372	171,287	1966-67	83,213
1966-67	32,096	127,982	152,434	177,468	1967-68	86,934
1967-68	32,876	131,874	160,858	185,310	1968-69	89,960
1968-69	34,254	132,348	166,128	195,112	1969-70	96,719
1969-70	33,861	133,087	166,209	199,989	1970-71	98,133
1970-71	34,742	135,733	167,829	200,951	1971-72	101,583
1971-72	34,916	137,773	170,649	202,745	1972-73	100,780
1972-73	34,400	137,919	172,173	205,049	1973-74	102,947
1973-74	34,732	138,790	172,651	206,905	1974-75	108,829
1974-75	34,713	138,761	173,503	207,364		

TABLE 10

(Continued)

School Year	Grade Twelve (X_1)*	Four-Year Periods (X_2)	Five-Year Periods (X_3)	Six-Year Periods (X_4)	School Year	Total Head Count Enrollment (Y)
1975-76	34,233	138,078	172,994	207,736		
1976-77	34,948	138,626	173,026	207,942	$r = .971 (X_1Y)$	
1977-78	34,705	138,599	173,331	207,731	$r = .995 (X_2Y)$	
1978-79	33,369	137,255	171,968	206,700	$r = .997 (X_3Y)$	
1979-80	32,510	135,532	169,765	204,478	$r = .997 (X_4Y)$	
1980-81	30,765	131,349	166,297	200,530		
1981-82	29,110	125,754	160,459	195,407	$Y = .8274 X_3 - 38,827$	
1982-83	27,624	120,009	153,378	188,083		
1983-84	25,219	112,718	145,228	178,597	$Y = .8274 (173,503) - 38,837$	
1984-85	24,044	105,997	136,762	169,272	$Y = .104,729$	
1985-86	24,346	101,233	130,343	161,108		
1986-87	25,496	99,105	126,729	155,839	$Y = .6923 X_4 - 37,523$	
1987-88	25,977	99,863	125,082	152,706	$Y = .6923 (207,364) - 37,523$	
1988-89	24,122	99,941	123,985	149,204	$Y = .106,035$	
1989-90	22,949	98,544	122,890	146,934		
1990-91	22,021	95,069	120,565	144,911		

*The grade 12 enrollments from 1951-52 to 1965-66 represent estimates of the September 15 enrollments; the grade 12 enrollments from 1966-67 to 1969-70 represent actual enrollments as of September 15 of each year; and the grade 12 enrollments from 1970-71 to 1990-91 represent the harmonic means.

** Sum of 18,537, 19,052, 19,383 and 19,616

*** Sum of 18,537, 19,052, 19,383, 19,616, and 20,041.

****Sum of 18,537, 19,052, 19,383, 19,616, 19,841, and 20,401

(5) the 1973-74 high school seniors represented potential college freshmen in 1974-75. Thus the entire group represented a sort of potential college population in 1974-75.

It is apparent from Table 10 that the number of seniors in the high schools will peak at about 35,000 in 1976-77. In terms of "six-year periods", the peak will be reached the same year at about 208,000.

In order to predict the number of students in all institutions of higher education in the years ahead, one can resort to regression techniques using the two sets of figures in Table 10 where: (1) X_4 or the grade twelve enrollments for "six-year periods" from 1956-57 to 1973-74 represent the independent variable; and (2) Y or the total head count enrollments in all institutions of higher education from 1957-58 to 1974-75 represent the dependent variable. The use of proper statistical formulas produced the following results:

1. Product-moment coefficient of correlation = .997.
2. Regression equation for predicting Y from X_4:

   $Y = .6923 (X_4) - 37,523$
3. Standard error of estimate = 1,781.

If the figures in the "six-year periods" column in Table 10 for the

year 1974-75 to 1984-85 are substituted in the regression equation, we obtain the predicted enrollments in Table 11. For example:

$$Y = .6923X_4 - 37,523$$

$$Y = .6923\ (207,364) - 38,827$$

$Y = 106,035$ or the total head count enrollment for all institutions of higher education for the Fall of 1975.

The predicted enrollments for the years 1975 to 1980 may be fairly realistic but the farther one goes into the future, the less confident one can be that the predicted numbers will actually materialize for several factors might operate to increase of limit enrollments. Some of these factors might be: (1) tuition charges; (2) selective admission policies; (3) economic conditions; (4) world conflict; (5) out-of-state enrollments; (6) the energy crisis; (7) opportunities for employment; (8) changes in the pattern of higher education including outreach efforts of the colleges and universities; (9) changes in the population figures for Kansas along with changes in the birth rate; (10) appropriations for facilities and personnel; (11) financial aid to students; (12) demand for trained personnel by government, business, and industry; (13) political stability in world affairs; (14) ability to sell higher education to the people of the state; and (15) alumni giving and other donations to colleges and students.

TABLE 11

POSSIBLE FUTURE HEAD COUNT ENROLLMENTS IN ALL INSTITUTIONS OF HIGHER EDUCATION

Fall of	Projected Number	31 - 32% Level* Lower	31 - 32% Level* Upper	5% Level** Lower	5% Level** Upper	1% Level*** Lower	1% Level*** Upper
1975	106,035	104,254	107,816	102,544	109,526	101,440	110,630
1976	106,293	104,512	108,074	102,802	109,784	101,698	110,888
1977	106,435	104,654	108,216	102,944	109,926	101,840	111,030
1978	106,298	104,508	108,070	102,798	109,780	101,694	110,884
1979	105,575	103,794	107,356	102,084	109,066	100,980	110,170
1980	104,037	102,256	105,818	100,546	107,528	99,442	108,632
1981	101,304	99,523	103,085	97,813	104,795	96,709	105,899
1982	97,757	95,976	99,538	94,266	101,248	93,162	102,352
1983	92,687	90,906	94,468	89,196	96,178	88,092	97,282
1984	86,120	84,339	87,901	82,629	89,611	81,525	90,715
1985	79,664	77,883	81,445	76,173	83,135	75,069	84,259

*The standard error of estimate for the two variables processed was 1,781. Assuming the addition of comparable data for the next eleven years (1975 to 1985) would not change the standard error of estimate, then the average dispersion of the observed measure about the predicted enrollments would be given by a standard deviation of 1,781.

**Standard error of estimate multiplied by 1.96 for a new standar deviation of 3,491.

***Standard error of estimate multiplied by 2.58 for a new standard deviation of 4,595.

It is evident from Table 11 that the peak enrollment will be reached in the Fall of 1978 with 106,289 students enrolled in all of the four types of institutions.

Table 12 shows the percentage of the total head count enrollment in

each of the types of institutions for the years 1955 to 1974. Twelve of the percentages were used to generate regression coefficients for each of the types of institutions using the numbers 1 to 12 as one variable and the percentages for the years 1963 to 1974 as the other variable. The years 1963 to 1974 were chosen for the community junior colleges or Type II institutions claimed an increasing percentage of the total head count enrollment from 1963 onwards. The regression coefficients in Table 14 represent the yearly percentage increases or decreases of the total head count enrollment during the twelve-year period from 1963 to 1974. In comparing the two sets of coefficients in Table 14, one notes a favorable increase for the Type I institutions and a decrease for the Type II and Type III institutions. Will this by the pattern in the years ahead? Only time will yield the answer.

Table 15 shows the projected percentages along with standard error of estimates for each type of institution for each of the six years from 1975 to 1980. The projected percentages in Table 15 were obtained by subtracting or adding the regression coefficients from the last percentage for each type of institution (see Table 12). In doing this, it is assumed that the coefficients in Table 14 for the past eleven years will be approximately the same for the next six years. Only time will prove the assumption correct or incorrect.

TABLE 12

PERCENTAGES OF THE TOTAL HEAD COUNT ENROLLMENT IN INSTITUTIONS OF HIGHER EDUCATION FROM 1955 TO 1974

	Type of Institution*					
Fall	I	II	III	IV	I&II	III&IV
1955	69,26	10.97	17.28	2.49	80.23	19.77
1956	71.56	9.92	16.38	2.14	81.48	18.52
1957	71.41	9.84	16.71	2.04	81.25	18.75
1958	71.40	9.97	16.58	2.05	81.37	18.63
1959	70.70	10.22	17.01	2.08	80.92	19.08
1960	70.62	10.21	16.84	2.33	80.83	19.17
1961	70.19	10.85	16.76	2.19	81.04	18.96
1962	70.63	10.65	16.59	2.13	81.28	18.72
1963	72.18	9.95	15.56	2.30	82.13	17.87
1964	71.70	11.04	14.93	2.33	82.74	17.26
1965	71.03	11.76	14.67	2.54	82.79	17.21
1966	70.07	12.44	15.02	2.46	82.51	17.49
1967	70.22	12.79	14.61	2.38	83.01	16.99
1968	70.50	12.83	14.40	2.27	83.33	16.67
1969	68.51	16.06	13.50	1.93	84.57	15.43
1970	68.35	17.47	12.35	1.83	85.82	14.18
1971	68.52	18.56	11.28	1.64	87.08	12.92
1972	68.14	19.50	10.87	1.49	87.64	12.36
1973	67.69	20.53	10.41	1.37	88.22	11.78
1974	67.94	21.00	9.75	1.31	88.94	11.06

* I - State and Municipal Institutions.
II - Public Community Two-Year Institutions.
III - Four-Year Private Institutions.
IV - Two-Year Private Institutions.

TABLE 13

HEAD COUNT ENROLLMENTS IN INSTITUTIONS OF HIGHER EDUCATION FROM 1955 TO 1974

Fall	Type of Institutions*				Total
	I	II	III	IV	
1955	26,351	4,175	6,574	949	38,049
1956	29,897	4,145	6,845	894	41,781
1957	30,909	4,259	7,233	881	43,282
1958	32,189	4,494	7,476	924	45,083
1959	32,983	4,765	7,933	968	46,647
1960	34,983	5,060	8,343	1,152	49,538
1961	38,103	5.891	9,100	1,190	54,284
1962	40,787	6,145	9,580	1,232	57,744
1963	43,697	6,024	9,421	1,394	60,536
1964	49,806	7,668	10,372	1,619	69,465
1965	55,482	9,190	11,460	1,983	78,115
1966	58,308	10.355	12,502	2,048	83,213
1967	61,048	11,123	12,698	2,065	86,934
1968	63,420	11,546	12,952	2,042	89,960
1969	66,263	15,532	13,058	1,866	96,719
1970	67,076	17,140	12,119	1,798	98,133
1971	69,600	18,856	11,463	1,664	101,583
1972	68,675	19,651	10,957	1,497	100,780
1973	69,685	21,134	10,715	1,413	102,947
1974	73,569	22,740	10,561	1,419	108,289

* I - State and Municipal Institutions.
II - Public Community Two-Year Institutions.
III - Four-Year Private Institutions.
IV - Two-Year Private Institutions.

TABLE 14

REGRESSION COEFFICIENTS OR YEARLY PERCENTAGE INCREASES OR DECREASES DURING AN ELEVEN-YEAR AND A TWELVE-YEAR PERIOD IN THE FOUR TYPES OF INSTITUTIONS

Type of Institution *	Regression Coefficient	
	1963-1973**	1963-1974***
I	-0.4488	-0.4137
II	1.0952	1.0805
III	-0.5328	-0.5509
IV	-0.1129	-0.1153

* I - State and Municipal Institutions.
II - Public Community Two-Year Institutions.
III - Four-Year Private Institutions.
IV - Two-Year Private Institutions.

** Kenneth E. Anderson. Planning and Evaluation in Higher Education. Mimeographed publication, Lawrence, Kansas, Spring 1974, 497 pp.

*** Kenneth E. Anderson and George B. Smith. Study of Enrollment Trends in Higher Education in Kansas. To be published in January 1975 by the Kansas Legislative Educational Planning Committee (1202 Commission).

TABLE 15

PROJECTED PERCENTAGES OF THE TOTAL HEAD COUNT ENROLLMENT ATTENDING EACH OF THE FOUR TYPES OF INSTITUTIONS FROM 1975 TO 1980

Type of Institution**	S.E. Est.*		Year					
			1975	1976	1977	1978	1979	1980
I	(0.48)	L.(.05)*	66.59	66.17	65.76	65.35	64.93	64.52
		L.(.32)*	67.05	66.63	66.22	65.81	65.39	64.98
		Projected %	67.53	67.11	66.70	66.29	65.87	65.46
		U.(32)*	68.01	67.59	67.18	66.77	66.35	65.94
		U.(.05)*	68.47	68.05	67.64	67.23	66.81	66.40
II	(0.77)	L(.05)	20.57	21.65	22.73	23.81	24.89	25.97
		L(.32)	21.31	22.39	23.47	24.55	25.63	26.71
		Projected %	22.08	23.16	24.24	25.32	26.40	27.48
		U(.32)	22.85	23.93	25.01	26.09	27.17	28.25
		U(.05)	23.59	24.67	25.75	26.83	27.91	28.99
III	(0.58)	L(.05)	8.06	7.51	6.96	6.41	5.86	5.30
		L(.32)	8.62	8.07	7.52	6.97	6.42	5.86
		Projected %	9.20	8.65	8.10	7.55	7.00	6.44
		U(.32)	9.78	9.23	8.68	8.13	7.58	7.02
		U(.05)	10.34	9.79	9.24	8.69	8.14	7.58
IV	(0.16)	L(.05)	0.88	0.77	0.65	0.54	0.42	0.31
		L(.32)	1.03	0.92	0.80	0.69	0.57	0.46
		Projected %	1.19	1.08	0.96	0.85	0.73	0.62
		U(.32)	1.35	1.24	1.12	1.01	0.89	0.78
		U(.05)	1.50	1.39	1.27	1.16	1.04	0.93

*Standard error of estimate. The lower and upper limits were obtained by multiplying the standard error of estimates by 1.00 and 1.96. For example, for the Type I institutions the multiplication of 0.48 by 1.00 = 0.48 and 0.48 by 1.96 = 0.94. These values were then added and subtracted from P or the projected percentages to obtain the lower and upper limits at the 32 percent level and the 5 percent level. Thus, in 1975 the chances of the percentage falling below 66.59 or above 68.47 for Type I institutions would be less than 5 in 100.

** I - State and Municipal Institutions.
II - Public Community Two-Year Institutions.
III - Four-Year Private Institutions.
IV - Ywo-Year Private Institutions.

The same procedures used for the four types of institutions could be used with individual institutions to obtain estimates of their future enrollments. Predictions for individual institutions, however, are subject to more error, especially for very small institutions.

Whether or not the percentages and numbers as shown in Table 15 and 16 will actually materialize is debatable. Howver, one can be relatively sure that the trends indicated will occur unless a striking change occurs in: (1) the population of Kansas; (2) the admission of out of-state students; (3) tuition-aid grants to students attending private institutions; and (4) the percentage of college-age youth, young aults, and older adults enrolling in these institutions in the years immediately ahead.

Two sets of limits are given in Table 16. This was done to illustrate that predictions cannot be precise but that error is involved in making predictions. Thus, preparing budgets or allocating monies on the basis of a suppesedly precise future enrollment number (full-time equivalent enrollment and not head count enrollment is usually employed) is unrealistic. Rather, allocations should be based on a range of possible future enrollments such as the 32 percent or 5 percent level as shown in Table 16. The alternative to a range of full-time equivalent enrollments is program budgeting.

TABLE 16

PROJECTED HEAD COUNT ENROLLMENTS FOR EACH OF THE FOUR TYPES OF INSTITUTIONS

Type*	Fall	Projected Number	Limits** Lower	Limits** Upper	Limits*** Lower	Limits*** Upper
I	1975	71,605	71,096	72,114	70,609	72,602
	1976	71,333	70,823	71,843	70,334	72,332
	1977	70,992	70,481	71,503	69,992	71,993
	1978	70,459	69,949	70,969	69,460	71,458
	1979	69,542	69,035	70,049	68,550	70,535
	1980	68,103	67,603	68,602	67,125	69,081
II	1975	23,413	22,596	24,229	21,811	25,014
	1976	24,617	23,799	25,436	23,012	26,222
	1977	25,800	24,980	26,619	24,193	27,407
	1978	26,912	26,094	27,731	25,307	28,517
	1979	27,872	27,059	28,685	26,278	29,466
	1980	28,589	27,788	29,390	27,018	30,160
III	1975	9,755	9,140	10,370	8,546	10,964
	1976	9,194	8,578	9,811	7,983	10,406
	1977	8,621	8,004	9,239	7,408	9,835
	1978	8,025	7,408	8,641	6,813	9,237
	1979	7,390	6,778	8,003	6,187	8,594
	1980	6,700	6,097	7,303	5,514	7,886
IV	1975	1,262	1,092	1,431	933	1,591
	1976	1,148	978	1,318	818	1,477
	1977	1,022	851	1,192	692	1,352
	1978	903	733	1,074	574	1,233
	1979	771	602	940	443	1,098
	1980	645	479	811	323	968

* I - State and Municipal Institutions.
II - Public Community Two-Year Institutions.
III - Four-Year Private Institutions.
IV - Two-Year Private Institutions.

** Plus and minus one standard error of estimate or the 32 percent level.

*** Plus and minus1. 96 times the standard error of estimate or the 5 percent level.

The techniques used for projecting college enrollments in one state were described as a possible way that might be used in other state and for individual colleges and universities within those state. Four obvious alternatives (8) sugest themselves in dealing withe the enrollment depression:

1. The first involves increased emphasis upon recruiting.
2. A second one involved retrenchment.
3. A third alternative involves the revision of instructional techniques in order to make the institution more attractive.
4. The most pragmatic involves significant curriculum reform along with new emphases uppon community services and continuing education.

The las alternative falls under the rubric now called "outreach" which heretofore was given only cursory attention during the growth period of the sixties by most institutions. Colleges and universities too might give greater attention to the problem of retention of students from the freshman to the senior year. Should the "outreach" efforts of the institutions continue unabated, the drop in enrollments will

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(8) Richard C. Richardson, Jr. "Dealing With the Enrollment Depression". (The article appeared in Change Magazine and was prepared by the Eric Clearinghouse for Junior Colleges).

be less severe. It is unlikely, however, that even with strenuous "outreach" efforts that the institutions can stem the drop in full-time equivalent enrollments in the years ahead as the predicted drop in high school graduates begins to take effect. The last alternative is now being put into operation by many private and public institutions in higher education throughout the nation to counteract the phenomenon of decreasing enrollments. Failure to explore the new emphases including realistic efforts in retaining students from the freshman to the senior year may result in the closing of many colleges, particularly the smaller private institutions.

CHAPTER VI

STUDENT NEEDS, ASPIRATIONS, AND ACCOMPLISHMENTS

INTRODUCTION

Educational needs and aspirations of posthigh school students are essential ingredients in educational planning. Although it would by difficult to quantify these entities for use in a computerized model, as described in Chapter VII, the results of questionnaires and surveys provide important insights and points of reference to sappert the other more quantified phases of educational planning.

One state made an extensive effort to ascertain needs, aspirations, and accomplishments of a variety of students intending to or actually participating in postsecondary programs within the state. Eleven comprenhensive survey instruments (questionnaires) were prepared and administered to several types of potential or actual postsecondary students: (1) high school seniors, (2) high school graduates, (3) vocational-technical students, (4) seniors and graduates of private four-year colleges, (5) community junior college students, and (6) seniors and graduates of the state's public colleges and universities. The results of the surveys and subsequent comparisons were

summarized in a sixty-six page report. (1)

The sections that follow are necessarily brief and are intended to highlight only a few of the findings.

High School Seniors

The sample chosen for study was selected in a way that made it representative of both the sizes of the high schools and the regions of the state. The sample represented about one-third of the total number of high school seniors in the state in 1971.

The following results were typical of the 11,065 respondents:

1. After graduation from high school, the male students plans were to:
   (1) enroll in further education or training: 73 percent;
   (2) enter full-time employment: 15 percent; and
   (3) enter military service: 12 percent.

2. After graduation from high school, the female students plans were to:

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(1) Kenneth E. Anderson. Student Needs, Aspirations, and Accomplishments: Essential Ingredients in State Planning for Postsecondary Education. Master Planning Commission, Planning Report Number 3, Topeka, Kansas, March, 1972, 66 pp.

(1) enroll in further education or training: 75 percent;

(2) enter full-time employment: 15 percent;

(3) become a housewife: 9 percent; and

(4) enter military service: 1 percent.

High School Graduates

The sample obtained was considered quite representative, since stratified-proportional sampling was used in terms of the sizes of high schools in existence in 1968. The sample included a few graduates from every high school by random means.

The following results were typical of the responses from 3,100 1968 graduates in 1970:

1. Although there was some variation among the graduates of the various types of schools, the following generalizations hold pertaining to the posthigh school endeavors of the graduates of the fall of 1968 following high school graduation: (1) abaut 58 percent enrolled in some type of college or university; (2) about 9 percent enrolled in a public or private technical, vocational, or business school; (3) about 22 percent entered full-time employment; (4) about 3 percent were

unemployed; (5) about 4 percent were housewifes; and (6) about 4 percent entered the military service.

2. Of the 1968 high school graduates who enrolled in some type of college or university; (1) about 47 percent enrolled in one of the six state colleges and universities; (2) about 4 percent enrolled in the one municipal university in the state; (3) abaut 26 percent enrolled in the state's community junior colleges; (4) about 11 percent enrolled in a two-year or four- year private college in the state; and (5) about 1o percent enrolled in an out-of state college or university.

3. The to ten occupation or job preferences of the male students ten years after graduation from high school were: (1) automotive mechanic: 8 percent; (2) teacher (elementary, secondary, college); 6 percent; (3) farm-ranch operator: 6 percent; (4) engineer (civil, chemical, etc.) 5 percent; (5) lawyer-judge: 4 percent; (6) scientist (agriculture, chemist, biologist, physician, etc.) 4 percent; (7) airplane pilot: 4 percent; (8) farm worker: 3 percent; (9) architect: 3 percent; and (10) computer programmer: 3 percent.

4. The top ten occupation of job preferences of the female

students ten years after graduation from high school were: (1) housewife (no outside work) 21 percent; (2) teacher (elementary, secondary, college): 14 percent; (3) steno/typist/secretary: 8 percent; (4) nurse (registered): 5 percent; (5) beautician: 5 percent; (6) social worker: 4 percent; (7) airline stewardess:4 percent; (8) designer/commercial artist: 3 percent (9) medial technician: 2 percent; and (10) computer programmer: 2 percent.

5. About 85 percent of the male students questioned said they planned to continue their education or training after high school as contrasted to 80 percent of the female students.

6. Of the 1968 high school graduates who enrolled in some type of college or university in the fall of 1968; (1) about 67 percent were still in attendance in 1970-71, and about 94 percent of these said they planned to continue into the next year of 1971-72; (2) about 11 percent had finished two years of college but were not in attendance in 1970-71; (3) about 15 percent attended only one full year; and (4) about 6 percent attended less than one year.

7. Of the 1968 high school graduates who enrolled in a technical, vocational, or business school: (1) about 49 percent enrolled in a private business or professional school; (2) about 18 percent

enrolled in an area vocational-technical school; (3) about 7 percent enrolled in the vocational-technical program at one of the state colleges; (4) about 2 percent enrolled in the one technical institute in the state; and (5) about 19 percent enrolled in an out-of-state private business of professional school.

8. Of the 1968 high school graduate who enrolled in some type of business, trade, or technical school: (1) about 71 percent completed a program for a job; and (2) about 77 percent attended this kind of school for one year or less.

9. Of the 1968 high school graduate who entered full-time employment in the fall of 1968, the following was typical in terms of the categories used: (1) professional or kindred workers (accountants, engineers, personnel workers): 3 percent; (2) managers, officials, farm owners, farm managers: less than 1 percent; (3) clerical workers (book-keepers, cashiers, store-keepers): (4) sales workers: 6 percent; (5) craftsmen, foremen, and kindred workers (carpenters, electricians, machinists): 5 percent; (6) operatives and kindred workers (apprentices, assemblers, assemblers, truck drivers, deliverymen, welders): 13 percent; (7) service workers (private household, janitors,

guards): 9 percent; and (8) laborers (including farm):27 percent.

Students Attending Vocational Technical Schools

Three types of students attend the vocational-technical schools: (1) high school students on a half-day basis during the last two years of high school, (2) adult evening students, and (3) regular posthigh school day students. Questionnaires were administerd to these three groups and the percentage of completed questionnaires returned was 41 percent, 22 percent, and 50 percent respectively. The following results were typical of the reasons given by the respondents for attending these schools:

1. The top three main reasons given by the high school male students for attending a vocational-technical school were: (1) to develop skill for a job, (2) to discover my interest, and (3) to broaden my interests.

2. The top three main reasons given by the adult evening male students for attending a vocational-technical school were: (1) to develop skill for a job, (2) to broaden my interests, and (3) to have more social contacts.

3. The top three main influences given by the posthigh school

male students for continuing their education beyond the high school were: (1) to develop skill for a job, (2) to broaden my interests, and (3) to become more independent.

4. The top three main reasons given by the high school female students for attending a vocational-technical schocl were:(1) to develop skill for a job, (2) to discover my interests, and (3) to learn to live and work with others.

5. The top three main reasons given by the adult evening female students for attending a vocational-technical school were: (1) to develop skill for a job, (2) to broaden my interests, and (3) to become more self-reliant.

6. The top three main reasons given by the posthigh school female students for attending a vocational-technical school were: (1) to develop skill for a job, (2) to become mare independent, and (3) to become more self-reliant.

Students Who Completed Programs in Vocational-Technical Schools

Questionnaires were mailed to all the students who completed a program in these schools in 1968-69. About 50 percent of the students returned the questionnaries. The following results were

typical of the answers given by the students:

1. About 64 percent rated the education and training received as "very good" or "superior" as opposed to about 5 percent who rated the education and training received as "very inferior" or "inferior".

2. About 79 percent felt that the vocational-technical schools sould confer an associate degree in science or technical training.

3. About 50 percent stated that the job they held was closely related to the program they followed in the vocational-technical school.

4. About 62 percent stated that they felt a need for more education and training.

5. The male students (285) indicated that after completing their programs they were engaged in the following types of work in the order indicated: (2) auto mechanics, (b) farming, (c) mechanics, (d) truck driving, (e) welding, (f) construction, (g) electrician, (h) machinist, (i) sales, (j) auto body repair, (k) drafting, (l) diesel mechanics, (m) TV repair, (n) printing, and (o) refrigeration repair.

6. The female students (297) indicated that after completing their programs they were engaged in the following types of work in the order indicated: (a) licensed practical nurse, (b) secretaries, (c) clerks, (d) cosmetology, (e) sales, (f) dental assistant, (g) nurse's aide, (h) food preparation, (l) data processing, and (j) waitress.

A Comparison of Community Junior College Students with Vocational-Technical Students

Almost identical questionnaties were administered to the two types of students about two years apart. The community junior college students completed the inquiry in 1968-69 and the vocational - technical students completed the inquiry in 1970-71. The items in both forms of the inquiry covered such areas as:

1. Socio-economic backgrounds.
2. Occupational and educational aspirations.
3. Appraisal of the guidance and counseling received.
4. Self-evaluation of traits and abilities.
5. Evaluation of the school or college climate and atmosphere.
6. Reasons for and factors influencing school or college attendance.

The community junior college respondents numbered 7, 734 students

(4, 725 male and 3, 009 females). The vocational-technical school respondents numbered 2, 324 students (1, 731 males and 593 females).

Tables 17 and 18 are tupical of some of the results obtained. Most of the items called for a response ranging from a low one to a high one as shown in Table 17. The percentages in Table 17 were converted to numbers and the six levels were then converted to T or normalized scores. The sum of the T scores and the sum of the T scores squared for the two contrasting groups were obtained and the technique of analysis of variance was employed to determine significant differences in the continuums. If a significant difference occurred as shown by the F ratio, the group with the higher mean was judged to be superior or had a higher rating than the group with the lower mean.

It is difficult to generalize in terms of the findings resulting from the comparisons of the two groups of students. However, in terms of the positiveness of "goodness" of the items, one might say that the community junior college students were more outstanding as a group than was the case for the vocational-technical students. Also, in the same context, the differences were not as significant among the two groups of female students. Although many differences occurred in favor of one group or the other and more often than not

TABLE 17

RESPONSES OF COMMUNITY JUNIOR COLLEGE AND VOCATIONAL-STUDENTS TO THE QUESTION: WHAT IS THE HIGHEST LEVEL OF FORMAL-EDUCATION ATTAINED BY YOUR MOTHER?

Possible Responses to the Question	Percentage of:			
	Males		Females	
	CJC	V-T	CJC	V-T
1 - Junior high school or less	9.6	14.6	11.3	19.7
2 - Some high school	14.4	15.8	14.1	20.1
3 - High school graduate	46.8	48.0	43.1	39.6
4 - Some college	19.4	15.0	21.5	15.4
5 - College degree	7.3	5.7	7.6	4.0
6 - Postgraduate degree	1.6	7.0	1.4	1.2
Total **	99.1	100.0	99.0	100.0
Means of T Scores	50.54*	48.79	50.77*	47.8

* The F ratio for the comparison of the male students was 45.56 and for 1 and 6,369 degrees of freedom, the probability was less than 1 in 100. The F ratio for comparison of the female students was 51.92 and for 1 and 3,559 degrees of freedom, the probability was lest than 1 in 100. Therefore one can say that the levels of formal education of the mothers were higher for the community junior college males and females than for the vocational-technical males and seniors.

** CJC percentages did not add up to 100 as the CJC study contained a "no response" category

TABLE 18

PROFILES OF COMMUNITY JUNIOR COLLEGE AND AREA VOCATIONAL-TECHNICAL SCHOOL STUDENTS ON TWELVE ITEMS HAVING AN UNDERLYING CONTINUUM

Item	Males		Females	
	CJC	V-T	CJC	V-T
1. How many students were in your high school graduating class?	Large size		Large size	
2. How old will you be on December 31 of this year?		older		older
3. What is the highest level of formal education attained by your father?	more formal education		more formal education	
4. What is the highest level of formal education attained by your mother?	more formal education		more formal education	
5. How would you rate the educational opportunities offered by your high school in regard to preparation for work in this school or college?	higher rating		higher rating	
6. How satisfied were you with your academic achievement in high school?		more satisfied		
7. How would you rate yourself in terms of intellectual curiosity?	more curious intelectually			

TABLE 19

PROFILES OF COMMUNITY JUNIOR COLLEGE AND AREA VOCATIONAL-TECHNICAL SCHOOL STUDENTS ON 21 ITEMS HAVING AN UNDERLYING CONTINUUM AND PERTAINING TO ABILITIES AND TRAITS

Ability or Trait	Males		Females	
	CJC	V-T	CJC	V-T
1. Academic ability	HR*		HR	
2. Athletic ability	HR			HR
3. Artistic ability		HR		HR
4. Cheerfulness				
5. Defensiveness		HR		
6. Drive to achieve		HR		
7. Leadership ability	HR			
8. Mathematic ability		HR		HR
9. Mechanical ability		HR		HR
10. Originality	HR		HR	
11. Political conservatism	HR		HR	
12. Political liberalism		HR	HR	
13. Popularity				
14. Popularity with the other sex			HR	
15. Public speaking ability	HR		HR	
16. Self-confidence (intellectual)				
17. Self-confidence (social)	HR			
18. Senssitivity to criticism				
19. Stubbornness	HR		HR	
20. Understanding others	HR		HR	
21. Writing ability	HR			

* HR indicates a higher rating significant at the 1 or 5 percent level.

in favor of the male and female community junior college groups over the male and female vocational-technical groups, does this mean that the vocational schools and community colleges should not be merged? The answer is probably no for a number of reasons, among which is the fact that today's technical world requires persons whose training has given them both cognitive skills and hand skills.

Without the first type of skills, the vocational-technical worker will be limited in his advancement. During the earlier decades of this century, what the labor market needed was a strong back --a weak mind was no drawback. The community junior college is now in a position to supply the cognitive skills, whereas the vocational-technical school cannot supply these skills which are so sorely needed in many of today's jobs. Despite these considerations, a state planning on having vocational schools and community colleges should be cognizant of the differences which exist between the two groups of students as shown by the results of this study, in order to plan realistic curricula for a variety of students of diverse aptitudes and interests, Barlow has this to say:

> Education for employment should be the main purpose of the educational enterprise, and the junior college should occupy a dominant position in this preparation. Neither condition exists, but both are worthy goals.

> While it is easy to criticize vocational education in the junior colleges, they do have many exemplary programs. Criticism, if justified, must center around comparative enrollments and the attitudes of policy makers.
>
> The idea of the junior college's basic role in vocational education grew concurrently with the junior college itself. Over 40 years ago, Eells, writing in Red Book, observed that young men and women were finding adequate preparation "for many life occupations" in the two years of junior college. The same observation can be made today with even more relevance, for the opportunities have been gratly expanded. The junior colleges, however, have only begun to scratch the surface of their potential for occupational education.(2)

John Lombardi (3) in this article entitled "A New Look at Vocational Education", discusses two aspects of the problem: (1) a question of status, and (2) making the critical choices. A few quotes from Lombardi's article are pertinent.

> Throughout the years since comprehensive community colleges emerged from the original, largely transfer-oriented junior colleges, an unusually large effort has gone into transforming vocational-technical education courses and programs into academic courses and programs. So far the effort has been as fruitless as the alchemists' attempts to make gold and silver out of common metals. But the fervor of those who seek this

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(2) Melvin L. Barlow. "The Case for Vocational Education in the Junior College". Eric Junior College Research Review, Volume 6, Number 6, February, 1972.

(3) John Lombardi. "A New Look at Vocational Education." Eric Clearinghouse for Junior Colleges (The article appeared in Change for March of 1973).

> magic change shows no signs of diminution. And as in the past, the modern alchemists conjure a new name, "career education", hoping its magical powers will cause a fusion or a transmutation. Thus they proclaim that vocational-technical has become academic education. The distinction should never have existed since all education is vocational in nature.
>
> In 1972, while Sidney P. Marland was the United States Commissioner of Education, he reasoned that "every young person, at whatever level he or she leaves formal education, (should leave) it with a specific and conscious career goal and the skills with which to reach that goal". He saw "no conflict in these related goals--occupational development and intellectual development. ...Career education", he added, "is a fabric of academic and occupational goals so closely woven that the separate threads compose a harmonious and mutually supportive pattern". But somehow Marland's exposition of the new goal has not met friendly reception. The term "career education" seems to have no more potency than the old names--occupational, semiprofessional,technical, vocational, trade.
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> .....
>
> Paradoxically, the debate on status so far has not impeded the growth of vocational programs in the community colleges. Despite some questioning of the inclusion in the curriculum of trade programs, most educators consider vocational education the community college's unique function, the one that most distinguishes it from other institutions of higher education. In fact, community college educators place more emphasis on this function in their publications and statements than on any of the others. As long as this attitude prevails, vocational educational education will continue to flourish and maintain a respected position in this community college.

Regardless of one's point of view converning vocational-technical and junior college education, any state contemplating mergers of the two types of schools should develop sound guidelines

to accomplish this.

Other Studies and Comparisons

Five other studies pertaining to student needs, aspirations, and accomplishments were carried out. These were:

1. A study of the Community Junior College Graduates.
2. A Comparison of Four Groups of Community Junior College Students.
3. A study of the Seniors and Graduates of Four-Year Private or Independent Colleges.
4. A study of the Seniors and Graduates of the State Public Colleges and Universities.
5. A Comparison of the Seniors and the Graduates of the Independent and Public Colleges and Universities.

These studies and comparisons yielded findings similar in nature to those described for the junior colleges and vocational - technical Schools.

However, the findings were different in kind and revealed points of view or points of reference pertaining to the effectiveness of the programs offered by the colleges and universities. In general the

students and graduates were pleased with the education received but at the same time they did point out areas wherein the colleges and universities were deficient in their offerings.

CHAPTER VII

EDUCATIONAL MODELING

INTRODUCTION

And educational system as a system, obviously differs greatly from the human body-or from a department store - in what it does, how it does it, and the reasons why. Yet in common with all other productive undertakings, it has a set of imputs which are subject to a process, designed to attain certain outputs, which are intended to satisfy the system's objetives. These form a dynamic, organic whole. And if one is to assess the health of an educational system in order to impove its performance and to plan its future intelligently, the relationship between its critical components must be examined in a unified vision. (1)

The above represents the ideal view of an educational system but in practice we usually view the system in a piecemeal fashion. For example, one state made a concerted effort to compile and generate three types of data pertinent to its educational planning for post-

(1) Philip H. Coombs. The World Education Crisis: A Systems Analysis. Oxford University Press, New York, 1970, p. 9.

secondary education:

1. The number of high school seniors projected through the mid 1980's by regions and for the state as a whole. (2)

2. The educational and training requirements of the economy through 1985. (3)

3. An assessment of needs, aspirations, and accomplishments of high school, are vocational-technical, community college, and public and idependent college and university students. (4)

These three data banks provided important insights. However, they did not privde an integrated picture of the inner-relationships - that might exist between the variables, nor did they indicate the degree of correlation between these variables and such parameters as cost,

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(2) Kenneth E. Anderson. Projection: Grade Twelve Enrollments in Kansas Public and Private High Schools, 1970-71 to 1986-87 Master Planning Commission, Topeka, Kansas, Planning Report Number 1, December, 1970, pp. 1-48.

(3) Harold L. Finch. Projection: Educational and Training Requirements of the Kansas Economy to 1985. Master Planning Commission, Topeka, Kansas, Planning Report Number 2, August, 1971, pp. 1-63.

(4) Kenneth E. Anderson. Student Needs, Aspirations, and Accomplishments: Essential Ingredient in State Planning for Postsecondary Education. Master Planning Commission, Planning Report Number 3, Topeka, Kansas, March, 1972, pp. 1-66.

revenue, time, space, staff, and programs. Furthermore, they did not provide a means of assessing alternatives.

In order to develop a meaningful plan for postsecondary education, it was necessary that these deficiencies be overcome. An educational model of the higher education system of the state was developed to ful-fill this need. In addition to permitting the analysis of the interaction of programs and institutions, this method will allow an "a priori" evaluation of educational planning alternatives. It is important to note that the educational model will be a quantitative tool for systems analysis. It cannot make judgements or suggest recomendations by itself, but it can be used to compare and optimize alternate educational systems. An educational model demands the development of a systematic way of collecting and collating basic and pertinent data, for without these there can be no educational modelling and projections for the future. Before proceeding further, one should have some understanding of models.

The Nature of Models

A model is simply a means of systematic planning. Most analyses of educational systems involve the development of models although they are not always identified as such. For example, the use of the cohort survival analysis to project enrollment at a particular level,

as described in Chapter V, is an example of modelling. One variable, the projected enrollment, is related to another by means of a statistical correlation. The result is a method of predicting the value of a parameter if another is restricted to specified values. A typical planning model consists of an array of such sub-models in which the relationship between all variables is defined to the extent made possible by the available data.

By statistical analysis, surveys, analytical investigations, or other means, the relationships between the individual variables can be established. These relationships can be regarded as sub-models. They predict the influence on one variable of a change in a single other variable. However, it is not only these individual changes which are of interest in the study of a total system. It is necessary to determine how a change in one varialbe can affect the entire system, for example, all other variables.

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Hence, the development of a systems model involves the development of both the sub-model correlations between the individual parameters and the coupling of these correlations into an interrelated network. The result is a tool which can be used to investigate a large number of alternatives without the costly requirements of actually implementing these alternatives. The model does not, of course, provide

solutions to specific problems but it does provide the capability to analyze solutions by the user of the model.

The modelling of educational systems involves factors such as student population distribution, manpower requirement projections, student need evaluations, current and planned programs, available facilities, financial concepts and numerous other institutional, political and public factors.

Let us suppose that a state wishes to examine the overal effect on its educational system of the establishment of a new government supported community junior college at a specified location. The model will enable the user to project the influence of this action on all the components of the educational system. For example, such action might result in an increased percentage of students from a certain area attending postsecondary schools, a temporary decrease in enrollment at a local four-year institution and in an adjacent vocational school, an increase in the number of individual with associate degrees entering the local labor market, and perhaps a long-range change in the distribution of educational funds within the district. The model would use the available data to quantify such factors.

The evolution of the model could proceed directly from the information

and correlations developed. These might consist of: (1) projection of twelfth grade enrollments, the central component of the student population distribution; (2) projection of manpower requirements and their-distribution throughout a state; and (3) projection of student needs. If no other factors were considered, each of the projections could serve as the basis for a model educational system. For example, an idealized systems model could be conceived which would provide the educational resources required to satisfy the projected labor demand. Similarly, a system could be developed which would be tailored only to the distribution of students in the state. However, such models would be obviously unrealistic. All of the three factors manpower requirements, student population, and student needs must be interrelated in a systems model which will satisfy, to the fullest extent possible, the demands of all factors. This is a restricted systems model but it is also a step towards an eventual planning base. It does represent an attempt to optimize the system based on the three sometimes conflicting elements. The factor not included in the model is the present and future impact of the existing educational system and this impact must be incorporated in order to move from a restricted systems model to a constrained one. This is generated by imposing on the restricted system the present educational system including the way in which the present system

changes with time. The resulting model provides a measure of the extent to which the current needs are met by the current system. But, more importantly it permite and investigation of the match needs and resorces if either or both undergo change. This change can be either an umplanned evolution of the system, in which case the model serves to update the status of the system, or planned innovations wherein the model is used as a decision-making tool to select one or more alternative courses of action.

This type of multiple correlation describes the required resources in terms of the demands placed upon the system. Because these demands have been projected (high school senior enrollments, manpower requirements, and student aspirations and needs), it will also be possible to project the resource requirements by means of the model and compare these requirements whith available and planned educational resources.

Concepts Relative to Modeling

Now that some understanding of the nature of models has been provided, the model developed for one state seemed to be well-suited to the study of the following four problems:

1. Determine what the optimum role, finalcial structure, and school organization should be for community junior colleges

and vocational-technical schools.

2. Propose the optimum organization for the coordination of all postsecondary institutions and recommed methods for the coordination of postsecondary institution programs with those of the secondary schools and the public and private four-year colleges and universities.

3. Indicate the impact of planning on the capability of the independent colleges and universities to provide diversity of opportunities in higher education within the state.

4. Submit recommendations regarding the use of existing facilities, the need for additional institutions to adequately serve the needs of students, or the advisability of discontinuing any existing program or institution.

These four problems generally have two major characteristics in common:

1. They are addressed to issues which involve the interaction of educational institutions and the relationships between institutions and the environment in which they function.

2. They involve analysis of the manner in which various institutions

contribute to the fulfillment of statewide postsecondary education objectives and the allocation of available resources.

Both of these caracteristics can be examined in terms of the existing educational system or in terms of the system which would result if various possible alternatives were implemented. The following examples should not be interpreted as implying limitations of the applications of the model, but rather to illustrate its more general utility.

Example of How the Model Might Be Used to Determine the Role, Financial Structure and Organization of Community Junior Colleges and Area Vocational-Technical Schools

The model can be used to examine the degree to which the community junior college and vocational-technical schools serve the educational system in fulfilling identifiable needs of the students. as measured by student desires and aspirations; the state's economy, as measured by manpower demands. This involves an analysis of student projection of future enrollments in community junior colleges and vocational-technical schools and the impact of this enrollment on other segments of the system such as the four-year institutions, and the examination of the roles of the institutions in the allocation of limited resources. Numerous alternatives can also be investigated

including the implications of providing two-year comprehensive educational programs within commuting distance of all students, the development of a system of community college districts, and many others.

The optimum role, financial structure, and organization of the community junior colleges and vocational-technical schools can be realistically determined only in the context of their relationships between each other and the other segments of the system. The model is required to carry out such a study.

Example of How the Model Might Be Used to Determine the Optimum Organization for the Coordination of Postsecondary Programs and Institutions

The educational model can be used to identify the nature of institutional interaction and the degree to which available programs respond to the educational needs of the State. For example, application of the model might reveal that job opportunities in some specified vocation might be plentiful in a region near institution A. However, institution A does not provide a vocational program in the specified field, whereas institution B, located in a region where that particular vocational need is not so great, offers the program. Some

type of cooperation between institutions A and B may appear warranted or the program can be shifted from one institution to another. The model can be utilized to quentify the need for institutional cooperation and to define the grounds on which that cooperation can be based.

Example of How the Model Might Be Used to Determing the Tole, Financing and Organization of Private Colleges and Universities

There are a number of important questions relating to private institutions which can be addressed with the aid of the model. The role of private colleges and universities in the total education program of the State can be defined by application of the model to the existing educational system. This will identify the part these institutions play in providing programs, supplying the manpower needs of the economy, providing opportunity for the realization of student aspirations, and satisfying other educational objectives of the State. The relationship of the private colleges to the other elements of the postsecondary educational system, can thereby be specified.

Several problems related to the financing of private colleges and universities can be examined by aplication of the model. For example, the model could be used to simulate the increased

enrollment at public institutions caused by discontinuing programs at private colleges or even the closure of one or more private colleges. The resulting increase in costs incurred by the public institutions, as determined by the model, can the be compared with the financing necessary to sustain the private college or colleges, the closure of which had been simulated.

Example of How the Model Might Be Used to Determine the Optimum Use of Existing Facilities and the Effect of the Addition or Closure of Programs of Institutions

This change involves the direct evaluation of educational alternatives and, therefore, is particularly amenable to analysis by application of the model. The model will contain routines designed specifically to simulate the closure or addition of institutions or programs. Also, various concepts for the utilization of existing facilities can be examined and compared by means of the model.

Although the educational model will provide a powerful, flexible systems analysis tool for the investigation of problems and alternatives, sound judgement and experience is required to structure alternatives for analysis by the model and to develop organizational concepts capable of responding to needs identified through use of

the model.

A Summary of Educational Planning Model Applications

The educational model is basically a computer-based tool for the simulation of events in a system of interactive institutions. It will enable the educational planner to predict and analyze the future consequences of action proposed for the structure or operation of the postsecondary system. This capability is essential for any realistic approach to the four problems (or more) which deal with institutional interaction.

It is no longer practical to base plans on analyses which consider the role, financial structure, or organization of isolated institutions. Similarly, the utility of existing facilities, the establishment or closure of institutions, the optimum role of private institutions, and nearly all aspects of statewide planning depende on a thorough knowledge of the manner in which institutions interact both now and in the future.

The model for this one State was developed to provide the following capabilities:

1. Projection of the Existing System: One utility of the model will be to simulate the future structure and operation of the post-

secondary educational system if no planned action is taken. This use is addressed to the question: To what extent will the system satisfy future needs if no changes are implemented?

2. Projection of the System with Institutional Closure: This application of the model deals with the effect of the closure of one or more institutions upon the continued operation of the remaining segments of the system.

3. Projection of the System with the Establishment of New Institutions: This use is concerned with the effect of the creation of one or more new institutions on the future operation of both the original institutions and the newly established total system.

4. Projection of the System with Combined Establishment and Closure of Institutions: This application represents a combination of the previous two and is intended to analyze plans which call for both the opening and closure of institutions. The various events can be treated simultaneously or sequentially.

5. Projection of the System with the Establishment and/or Closure of Programs: This application deals with the creation and/or closure of one or more programs at existing or new institu-

tions and is being developed to predict the influence of such action on the overall system and the individual elements.

6. Projection of the System to a Accomodate Changes in Governing Regulations: This use of the model provides simulation of the system operation following a change in governing legislation or procedures. For example, it might predict the effect of a change in state financial aid and on the total system and the various institutions.

7. Projection of the System to Evaluate Alternatives Which Yield Specified Outcomes (possible future application): This application would require the model to determine the characteristics of the system which would enable it to produce specified results. For example, it might be used to project the characteristics of an educational system designed to match the needs of the state or regional economy. Because of its complexity and the crucial need for the other applications, this use has been assigned a lesser priority and will be developed only as time permits.

Capabilities of the model are further identified by the type of output it will provide in the analysis of specified educational concepts.

There are three basic classes of autput, each of which can be specified in terms of several categories:

1. Number of students in any portion of the educational system according to:
   a. geographical region of origin,
   b. type of institution (whether four-year public, four-year public, etc.),
   c. academic level (freshman, sophomore, junior, senior, graduate),
   d. type of program (laboratory-oriented or lecture-oriented), and
   e. educational class according to training required for job entry.

2. Numbers of programs and/or institutions according to:
   a. geographical region, and
   b. type of institutions.

3. Cost (both total cost and unit costs) according to:
   a. geographical region,
   b. type of institution,
   c. type of program, and

d. Educational class according to training required for job entry.

CHAPTER VIII

APPLICATION OF THE MODEL AND RECOMMENDATIONS FOR THE FUTURE

INTRODUCTION

The previous Chapter presented some concepts relative to modeling. A computerized model was developed in order to Forecast educational requirements. The procedures have not been published but suffice it to say that the projections made were based on the existing system of institutions and assumed that no major changes in social, economic, political or other trends would occur which might affect the State's postsecondary instructions.

Briefly stated, the primary use of the planning tool was that of providing an "a priori" evaluation of educational alternatives. In order to reduce the task of analyzing and unlimited number of combinations of institution-related variables to a representative but manageable size, the nine most critical variables were isolated and systematically studied. The probable scope of the alternatives predicted by the influence of possible political, social, and economic forces was identified. The variables, influencing factors, and range of values investigated are defined in Table 20. And exhaustive

computerized analysis of the alternatives outlined in Table 20 was conducted and will be the subject of a subsequent report. (1) After careful study of the results, a major modification to the existing system of institutions was formulated. In the judgment of the Master Planning Commission, the proposed plan best fulfills the philosophy for the future as outlined in Chapter III. Recommendations (2) were made regarding the future course of higher education in the state. Only those recommendations of a general nature are listed in this document.

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(1) This report is being prepared by Dr. Harold L. Finch who was the project director on the computerized model for the Kansas Master Planning Commission.

(2) Postsecondary Educational Planning to 1985: Final Report and Recommendations. Master Planning Commission, Topeka, Kansas, December, 1972, 62 pp.

TABLE 20

RANGE OF PLANNING VARIABLES UTILIZED IN THE SIMULATION AND ANALYSIS OF INSTITUTIONAL SYSTEM ALTERNATIVES

PLANNING VARIABLE	REPRESENTATIVE FACTORS THAT MANY AFFECT PLANNING	RANGE OF CONDITIONS CONSIDERED IN ANALYZING AND PROJECTING ALTERNATIVES	
1. Institutional system.	Moratorium on 2 year institutions, availability of construction funds, adequacy of existing space, resistance to institutional merger.	Status Quo:	No change in existing system of 61 institutions.
		Options:	Arrangements resulting from various combinations of closure and merger.
2. Postsecondary participation rates.	Changing participation rates of adults and veterans, job market for high school graduates, job market for college graduates, draft quotas, availability of revenue, availability of classroom space.	Status Quo:	Rate of increase less than immediate past (1980 up 2 percent from 1971).
		Options:	1. Rate 6 percent greater than Status Quo. 2. Rate unchanged during the 70's. 3. Rate 6 percent less than Status Quo.
3. Private education "share" of first year enrollments.	Emphasis on student recruitment, tuition, state and federal aid to private institutions, state of the economy, accessability of public education, relevancy of program.	Status Quo:	Rate of decrease slightly less than the past.
		Options:	1. Decrease for several years: then increase to level of the late 60's. 2. Rate of decrease same as immediate past. 3. No change from current rate.
4. Area vocational-technical schools and community junior colleges first-year "share" of enrollments.	Availability of space, state of the economy, relevancy of program, quidance and counseling, job market for certificate and Associate of Art level of preparation.	Status Quo:	Rate of increase slightly less than the past.
		Options:	1. Increments "gained" or "lost" by private sector distributed on a pro rata basis among the public types of institutions.

TABLE 20 (Continued)

PLANNING VARIABLE	REPRESENTATIVE FACTORS THAT MAY AFFECT PLANNING	RANGE OF CONDITIONS CONSIDERED IN ANALYZING AND PROJECTINS ALTERNATIVES	
			2. Rate of increase same as immediate past but adjusted to compensate for changes among the other public and private types of institutions.
5. Public college and university "share" of first-year enrollments.	Availability of operation funds, availability of area vocational-technical schools and community junior colleges alternatives, job market for Bachelor of Science, and graduate level training, campus unrest, student entrance criteria.	Status Quo:	Decrease gradually tapering off.
		Options:	1. Increments "gained" or "lost" by private sector distributed on a pro rata basis among the public types of institutions.
			2. Rate of decrease same as immediate past but adjusted to compensate for changes among the other public and private types of institutions.
6. Ratio of Academic Occupational Enrollments.	Job market availability of revenue and space, high school counseling, vocational legislation, status of occupational education.	Status Quo:	No change from current emphasis.
		Options:	1. Double occupational emphasis at 2-year institutions serving areas of high demand for semi-professionals.
			2. Increase occupational emphasis at selected 2-year institutions to 25 percent.
			3. Increase occupational emphasis at all 2-year institutions to 50 percent.

TABLE 20 (Continued)

PLANNING VARIABLE	REPRESENTATIVE FACTORS THAT MAY AFFECT PLANNING	RANGE OF CONDITIONS CONSIDERED IN ANALYZING AND PROJECTINS ALTERNATIVES
7. Type of Occupational Programs (e.g. allied health paraprofessional).	Needs of the economy, state priorities, relative cost of programs, public awareness, availability of trained staff.	Status Quo: No change from current distribution. Options: 1. Double allied health enrollments, reduce trade/tech enrollments by like amount. 2. Double allied health enrolments; reduce business education enrollments by like amount.
8. Annual rate of inflation of educational costs.	Tax lid, state of the economy, teacher unionization, demand for educational services, innovation.	Status Quo: 5% Options: 1.0% 2.25% 3.7.5% 4.10.0%
9. Revenue distribution formula.	Legislation, voucher plan, property tax rebellion, tuition ceilings, incentives based on state priorities.	Status Qou: Same as 1970. Options: 1. 50 percent state aid to public 2-year institutions. 2. Property tax eliminated.

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Application of the Model

The computerized model was used to project the existing system of postsecondary education to 1980 to provide a basis for evaluating its adequacy relative to the future needs of the State. The procedure of analysis assumed no changes in the number or type of institutions or in their governance or finance. Further, it was assumed that current trends and patterns would continue relative to postsecondary participation rates, rates student aspirations, societal attitudes and values, program offerings, rate of inflation and student mix (e. g., ratio of adults to young people).

Under these assumed conditions, 92 percent of all postsecondary students would be enrolled in public education by 1980-up seven percent from 1970. A number of private colleges would no longer be economically viable. By that time, the percent of entering students enrolled in four-year colleges and universities would have decreased to just under 50 percent -down 10 percent from 1970. An extension of the existing construction moratorium on community junior colleges and area vocational-technical schools would have prevented this trend from advancing any further. Tables 21 and 22 are examples of the data generated via the computer model.

In 1970 the State's system of postsecondary education encompased 63

TABLE 21

1970 FULL-TIME EQUIVALENT EROLLMENTS*

INSTITUTIONAL TYPE	TOTAL	1ST YR.	2ND YR.	JUNIOR	SENIOR	GRAD.
Public Four-Year Colleges**	61,187	14,608	12,765	13,063	12,065	8,686
Community Junior Colleges	14,873	9,740	5,133			
Area Vocational-Technical Schools and the Technical Institute	4,046	2,996	1,050			
Private Four-Year Colleges	12,231	3,993	2,967	2,588	2,683	
Private Junior Colleges	1,475	872	603			
ALL INSTITUTIONS	93,812	32,209	22,518	15,651	14,748	8,686

* Data provide by respective institutions.

** Statistics relative to the State's Medical Center are not included.

TABLE 22

1980 FULL-TIME EQUIVALENT ENROLLMENT PROJECTIONS*

INSTITUTIONAL TYPE	TOTAL	1ST YR.	2ND YR.	JUNIOR	SENIOR	GRAD.
Public Four-Year Colleges***	68,757	14,025	12,424	16,119	15,164	11,025
Community Junior Colleges	19,383	12,137	7,246			
Area Vocational-Technical Schools and the Technical Institute	7,467	5,082	2,385			
Private Four-Year Colleges**	7,648	1,895	1,685	1,984	2,084	
Private Junior Colleges**	484	251	233			
ALL INSTITUTIONS**	103,739	33,390	23,973	18,103	17,248	11,026

* Projections based on existing system of institutions and current legislative, social, economic and educational trends and patterns and upon the constinuation of the current rate of escalation of educational costs.

** Enrollments of some private colleges are projected to be insufficient to sustain viable programs; however, budgetary totals do not reflect losses that may result from closure of institutions.

*** Data relative to the State's Medical Center are not included.

public and private institutions and served 94,000 full-time equivalent (FTE) students at an operting cost of 180 million dolars. Since that time the total enrollment has increased slightly and is expected to continue to gradually rise until it peaks at about 105,000 students in 1979. Beginning in 1980, postsecondary enrollments will drop sharply. This decline, which will extend through 1990 before reversing again, will be a reflection of the substantial drop in birth rates during the 1960's.

In 1970, 85 percent of all postsecondary students were enrolled in public institutions. These public students were predominantly (90 percent) graduates of the State's high schools, whereas 50 percent of the students enrolled in private colleges were from out of state. Approximately 60 percent of entering public and private students attended four-year institutions. A detailed enrollment report by class was presented in Tables 21 and 22 for 1970 and 1980 for: (a) public institutions and (b) public and private groupings by institutional type. The fastest growing sectors of postsecondary education during this period were the community junior college and the area vocational-technical schools. Although overall enrollments of private colleges as a whole exhibited stability, the number of students entering at the first-year level began to markedly decline. A similar decline, but to a lesser extent, was experienced at the freshman level of the

public four-year college group.

In 1970, the total operating cost of the State's postsecondary education was 180 million dollars. Of this amount 86 percent was spent for public education. Unit institutional operating cost ranged from $868 to $3,972 per FTE student -an indication of wide differences in such factors as objectives, programs and enrollments. The average cost per full-time equivalent student was $1, 918.

Sources of revenue also differed markedly from institutions to institution and from type to type. In 1970, state and federal taxes constituted the following percentages of operating revenue:

Public four-year colleges	71%
Area Vocational-Technical Schools and the one technical institute	54
Community junior colleges	25
Private junior colleges	5
private four-year colleges	4

The cost of postsecondary education will almost double during the 1970's to 350 million dollars. Inflation based on annual rate of five percent will account for 63 percent of the 170 million dollar increase in operating expenditures during this decade.

The system of institutions in 1970 included seven public four-year colleges, nineteen community junior colleges, five private junior colleges, thirteen vocational-technical schools and one technical institute. The from of postsecondary governance is widely variant among institutions and type of institutions. Six of the public four-year colleges and universities are governed by a Board of Regents; the municipal university is governed by a municipal board which includes a representative from the Board of Regents. Each of the private colleges and universities, both two-year and four-year, is responsible to a board affiliated with a religious order or denomination. All public two-year institutions are within the jurisdiction of the State Board of Education; however, at the local level they are subject to a number of varying arrangements of governance and control.

RECOMENDATIONS

The previous section of this Chapter provided a brief report of the status of the system in 1970 and how it might look in 1980 as a result of projections via the computer model. This section lists some of the recommendations growing out of the findings and deliberations of the commission.

The following recommendations are of a general natura (the specific ones appear in the report noted in footnote Number 2):

1. It is recommended that the existing dual system of area vocational-technical schools, community junior colleges, and the one technical institute be combined into a streamlined and integrated network of comprehensive two-year colleges. Concurrent with this recommendation is the requirement that enforceable guidelines and assurances be instituted to help insure that occupational and academic programs become complementary components of postsecondary education and that they attain positions of quality and stature so as to best meet the postsecondary needs of all the citizens of the State. The relative extent of occupational and academic offerings of each institution should be determined by the local governing board

and should be continually evaluated so as to be most responsive to the otherwise unfulfilled educational and training needs of the total population being served.

2. It is recommended that the system of public four-year colleges and universities be unchanged.

3. It is recommended that no new institutions be established during the 1970's except those resulting from mergers as previously defined.

4. It is recommended that a permanent and independent state planning agency be created, appointed by the legislature, charged with the continuing responsibility of research and planning for a comprehensive system of postsecondary education. This agency to be known as the "State Planning Commission for Postsecondary Education", of "State Commission", also shall be designated under Section 1202 of the federal Education Amendments of 1972, as the post-secondary education commission. (3). Also after June 30, 1973, the State Commission should be assigned sole

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(3) U.S. Congress, Senate, Education Amendments of 1972, 92d Congress, 2d Sess., 1972, Title X, Part L, Sec. 1202 (a).

responsibility for the administration of all aspects of post-secondary education including state plans required under Section 105, 603, 704 and Titles VI and VII of the Higher Education Act of 1965. (4)

5. It is recommended that a State Management Agency be created, appointed by the Governor with the advice and consent of the Senate, charged with the management of the state interest in a comprehensive system of postsecondary education. This agency also shall be designated under Part B, Section 1055 of the federal Education Amendments of 1972, as the state agency responsible for administration of Occupational Educational Programs. (5)

6. It is recommended that the six state colleges and universities

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(4) It is the MPC's understanding that the intent of the federal Education Amendments of 1972 is to consolidate all post-secondary planning at the state level under the jurisdiction of the "1202" State Commission. It is further understood that the separate state plans and agencies previously required in federal funding as set forth in such acts as The Higher Education Act of 1965 and The Higher Education Facilities Act of 1963 would therefore be eliminated. Guidelines for the implementation of the federal Education Amendments of 1972 are expected in early 1973.

(5) 4 U.S. Congress, Senate, Education Amendments of 1972, 92d Congress, 2d Sess., 1972, Title X, Part B, Sec. 1055(a)

each be governed by a board of trustees, appointed by the Governor with the advice and consent of the Senate. All other public postsecondary institutions should be governed by locally elected boards. Institutional boards should contract with elementary and secondary boards to enable occupational facilities and staff to be utilized by elementary and secondary students who could benefit from such training and who otherwise would not have such training opportunities available to them.

7. It is recommended that all appointments to boards and commissions (i.e., those specified in Recommendations 4, 5, and 6) be for staggered termes, bipartisan and geographically representative.

8. Tuition (or fees) to be paid by each student attending a public institution should be determined every two years and should be equal to 25 percent of the cost per full-time equivalent student for each institution.

9. State and federal appropriations should cover the remaining 75 percent of the cost per full-time equivalent student for each institution. Institutional funds obtained from endowments and other non-public sources should be excluded from the

computation of state and federal appropriations. With the student, the state and federal governments providing the whole of institutional expenditures the current provision for out-district tuition would be abandoned.

10. A student assistance program should be established on the basis of need and made available to all Kansans in attendance at public or private postsecondary institutions. This aid sould not exceed an amount equal to demonstrated need, the cost of tuition and fees at the institution where the student is in attendance or an amount initially set at $1400, whichever is less. Any federal aid to students not directly applicable to tuition apyments and any funded scholarship grants should be excluded.

11. The State Commission should give future consideration to the student assuming a larger proportion of the cost of his education, together with an expanded student aid program. Consideration should also be given to the provision of tuition incentives geared to state priorities.

12. A statewide fund should be established to cover future outlays at public institutions for capital expenditures for buildings and equipment.

SUMMARY

This chapter plus the first seven have presented a condensed version of one state's effort in planning, for the future of higher education. It is hoped that the sequence of the chapters possesses some logical organization to the reader. It is also hoped that those in charge of higher education in Colombia may gain some ideas which may have some applicability to the problems facing higher education in Colombia.

The recommendations were uniquely formulated to meet postsecondary educational problems and challenges that lie ahead in one state. The innovative approach to the assignment was particularly manifested in the analytical simulation of various alternatives to the existing system. A computer program was developed which allows "a priori" analysis of the factors that are critical in planning. It was recommended that the computer model and the related bank of uniform data for the state's system of postsecondary education be continually updated and used in ongoing study and evaluation. The recommended plan for governance was also unique. If the intent of the plan is carried out, it will provide the needed mechanism for implementation of a coordinated and effective system of statewide postsecondary education. The plan was designed also to be in

harmony with the purposes and requirements of the Federal Education Amendment Act of 1972. In this connection, it is of utmost importance that the State undertake to meet the governance requirements of this new Federal legislation as ealy as it possible can.

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